AFRP 85-1 VOL 22 NO 2 Summer 1981

air force engineering & services quarterly

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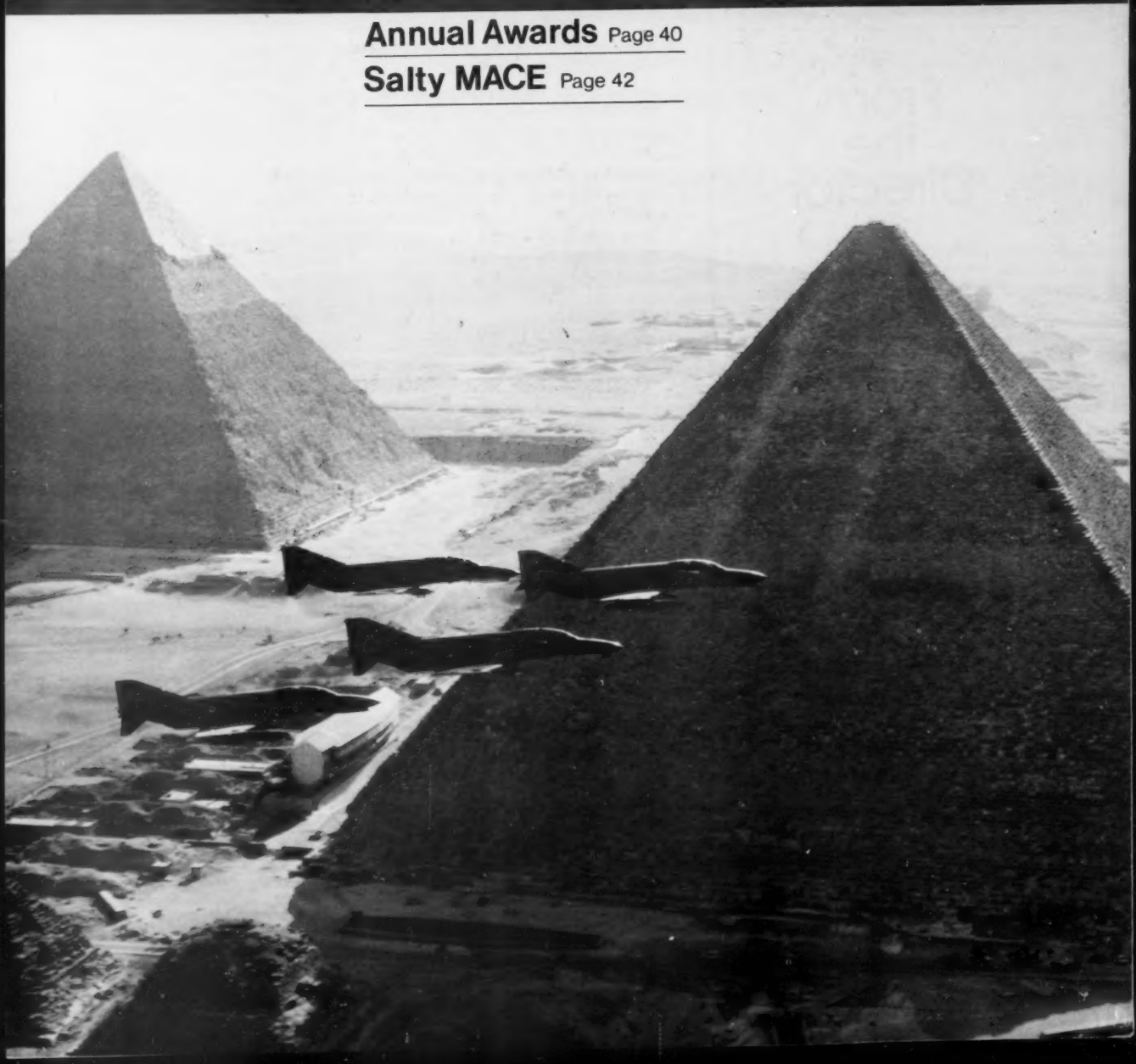


From the Director

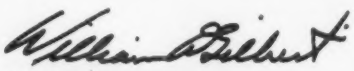
Readiness revisited

Readiness is the result of training and refining human capabilities, having proper equipment, the ability to rapidly deploy, and a strong, personal commitment. The primary result is immediate response to any national contingency situation. A by-product is our readiness to cope with the unexpected, at our facilities, in our communities and elsewhere that our President directs.

Last year, I challenged you to be a believer. I said, "Keep your training up to standards and be prepared to support contingency requirements on short notice — whatever they are and wherever."

That challenge was in our August 1980 issue. Its theme was "Readiness — our first priority." Theme of this issue is "Readiness revisited." In it we update the status of rapid runway repair; and deploy with our people to Egypt in the first operational overseas use of Harvest BARE equipment. Training is a dynamic part of readiness, and we learn how to simulate our wartime mission and requirements right at home. Specific contributions to readiness are outlined in Europe and the Pacific.

Is there a measure to readiness when there is no war? In our last readiness issue, I spoke with pride of the responses of our people involved in supporting the Cuban refugee center at Eglin AFB, Florida; surveys of potential world operational sites; and of the involvement of our people in disaster response in southern California. As this issue goes to press, more than 500 military volunteers under the leadership of Air Force civil engineers at Patrick AFB, Fla., responded to the collapse of a condominium under construction at Cocoa Beach. Volunteering to local Civil Preparedness officials, these engineering and services people were clearly ready to selflessly respond to the needs of their community, with professionalism, dedication, and pride; an act of deeply felt concern for their fellow human beings. The readiness capability and the commitment to rapidly respond at home and overseas is the hallmark quality of Air Force engineering and services people. That is why we constitute an invaluable national resource — to meet our worldwide needs; to respond to humanitarian needs at home. You are a part of the finest team of professionals ever fielded by the Air Force.



WILLIAM D. GILBERT
Major General, USAF
Director of Engineering and Services

This issue revisits Engineering and Services teams worldwide, who make readiness a reality.

engineering & services

Air Force Engineering and Services Quarterly

AFRP 85-1 VOL 22 NO. 2

Maj Gen William D. Gilbert
Director
Engineering and Services
HQ USAF

Col Hisao Yamada
Commander
Engineering & Services Center
Tyndall AFB, Florida

EDITORIAL STAFF

H. Perry Sullivan
Editor

Lt Col Thomas G. Seeberger
USAFR Associate Editor

Dean M. Spencer
Production/Art Editor

CALL OR WRITE
The Editor
HQ AFESC/DEJ
Tyndall AFB FL 32403
AUTOVON 970-6467

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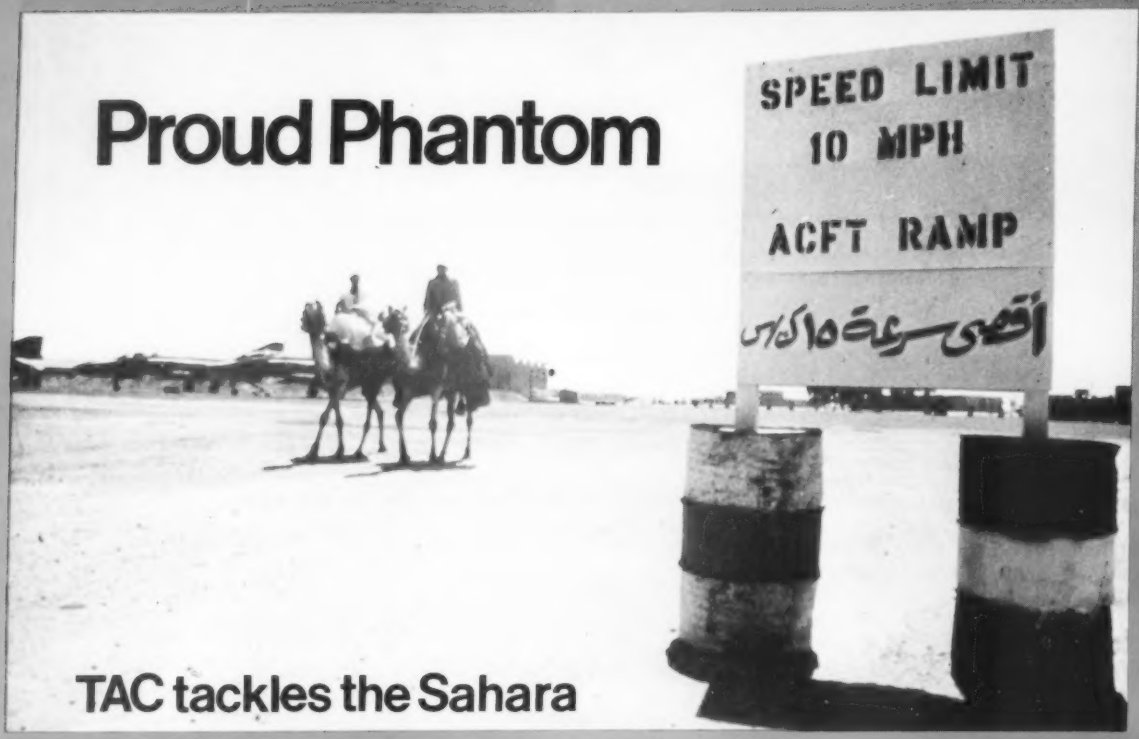
DISTRIBUTION: F. The QUARTERLY'S annual subscription rates are $6.00 domestic; $7.50 foreign; $1.50 per copy. Mail check or money order to Superintendent of Documents, Government Printing Office, Washington DC 20402. Reader per copy ratio: 5 to 1.

The **Air Force Engineering & Services Quarterly** is an official non-directive Headquarters US Air Force publication, published quarterly under provisions of Chapter 12, AFR 5-1. Its purpose is to provide Air Force Civil Engineering and Services personnel with a timely and comprehensive picture of the importance, wide ranging involvement and direct relationship of civil engineering and services activities to successful accomplishment of the Air Force mission. It provides current information about significant civil engineering and services programs and accomplishments throughout the Air Force; pertinent developments in science engineering and management; and educational/training opportunities for enhancing professional thought and development. The **Quarterly** is edited and published by HQ Air Force Engineering and Services Center, Tyndall AFB, Florida. Contributions, suggestions and criticism are welcome. Opinions expressed do not necessarily reflect the official viewpoint of the Department of the Air Force, the Director of Engineering and Services or the editorial staff. Authority to publish this periodical automatically expires on January 1982 unless its continuance is authorized by the approving authority prior to that date. The use of a name of any specific commercial product, commodity or service in this publication does not imply endorsement by the Air Force.

Proud Phantom



TAC tackles the Sahara

By Maj George E. Ehnert, Capt Ronald V. Descheneaux, and Capt Terrence E. Kolet

PROUD PHANTOM was a Joint Chiefs of Staff (JCS) - directed deployment of a 12 aircraft F-4 squadron from Moody AFB, Georgia, and support elements to a desert airfield at Cairo West Airport, Egypt, for joint USAF and Egyptian air force training. This exercise was the first official American military presence in Egypt since World War II. It seemed somehow appropriate that this auspicious event took place just off the end of one of the world's oldest runways, built in 1919. All flying, maintenance, and support were conducted using Harvest Bare (HB) assets in their first overseas deployment. It tested our capability to rapidly deploy and establish an operational bare base (BB) in an austere desert environment. Prior to exercise PROUD PHANTOM, a squadron-size HB package had never been operationally deployed nor its capabilities fully tested. PROUD PHANTOM was a perfect opportunity for engineering and services to test HB assets over a substantial period of time in real-world conditions.

The exercise for Tactical Air Command (TAC) began in mid-May 1980 when an eight-man advance team (ADVON) arrived at Cairo West. Representatives of civil engineering, operations, and communications were charged with surveying the exercise site and fine tuning the sequence of events for the actual deployment. What confronted the ADVON team on its arrival in the featureless desert environment was an unimproved

piece of relatively flat, sandy real estate with unpurified water 2,000 feet from the proposed deployment site, no compatible electrical power, and no facilities to house operations or support functions. However, there was a good runway and the water could be made potable. On June 15, 1980, one week after the ADVON team departed, the first USAF PROUD PHANTOM personnel arrived. On June 18, 95 people and equipment from the 823d Civil Engineering Squadron (RED HORSE), Hulburt Field, Eglin AFB, Florida, arrived to do most of the site preparation. The RED HORSE team was relatively self-sufficient with their own tents and mobility gear. On June 20, 45 people from the 4449th Mobility Support Squadron (MOBSS), Holloman AFB, New Mexico, arrived and unfolded the first expandable temporary shelter. While working on setting up the BB, the ADVON folks lived in a tent city. On June 22, only seven days after the first C-5 landed, all site personnel were served a hot meal cooked on Harvest Eagle field kitchen assets. Rations had arrived from Ramstein AB, Germany, and the flow would continue for the duration of the exercise. The success of the ensuing exercise was incredible.

In three weeks an entire Air Force installation with more than 500 people supporting 12 F-4s was erected beside an existing runway in the desert, collocated on a friendly nation's operating base. They first established a 3,000 KW power plant with a ten-mile distribution system and then erected 64 personnel shelters, 29 maintenance shops, 21 offices, eight warehouses, an aircraft hangar, five latrine facilities, three shower facilities, a dining hall, field laundry, tactical site exchange, chapel and a medical clinic. They layed 18,000 square feet of AM-2 matting for aircraft parking, and installed a 1,500 gallon-per-hour water purification system with over 2½ miles of water distribution lines. Each installation presented interesting challenges and rewards in experience and lessons learned for civil engineering and services people. Space allows only a few to be covered here.

Precisely on schedule after a 13-hour direct flight from Moody AFB, requiring 10 in-flight refuelings, 12 operational F-4s landed on July 10. Four of them turned around and launched on the first local area orientation flight two hours after arrival. These mission aircraft were met by professionals at a well prepared BB support installation.

PROUD PHANTOM was supported completely with HB assets. Over 150 basic and 10 special purpose structures were erected to provide buildings for all operations and support requirements. Expandable logistics shelters provided most of the maintenance facilities such as aircraft maintenance and civil engineering and service shops. In the shipping mode each unit measures 13' X 9' X 8', can hold 10,000 pounds, and serves as storage and shipping containers for the tools and equipment it will support. Expanding to 13' X 9' X 24', the shelter provides a fully usable shop with a minimum of effort. Heating, cooling, and ventilation are incorporated into the package.

Personnel shelters comprised the majority of the HB units deployed. Ninety-six provided billets, offices, a chapel, a post office, a clinic, and recreation space for the 500-plus base personnel. Measuring about 13' X 8' X 3' in the shipping mode, each unit expands to 13' X 8' X 33' and is designed to billet 12 people, but can and did serve extremely well for other troop support purposes. Both the air-conditioning and heating capabilities of these units were tested as temperatures during the exercise went from above 115° F to a low of 48° F.

We also erected six multipurpose shelters. Each of the units opened to 30' X 45' X 11' and had climatic control. Supply, food service, the field laundry, and the tactical site exchange were housed in these shelters.

Finally, the site activation team erected a 58' X 80' aircraft hangar. It provided protection from the desert sun and heat, and from wind-driven sand. Up to four F-4s could be sheltered under its cover.

Three special purpose HB units included the kitchen, latrines, and showers. Two multipurpose shelters were joined together to form one open 30' X 90' X 11' patron

seating area, with a HB kitchen structure at each end. Each of the kitchens was equipped with a grill, oven, stove, steam table, steam pressure cooker, warming cabinet, sink, and an attached walk-in refrigerator and freezer units. Beginning on July 6 and continuing through October 15, 1980, without a missed meal, the PROUD PHANTOM Prime RIBS personnel served four hot meals a day using this sophisticated facility. Real-world deployment food fare will be adequate but austere. However, during PROUD PHANTOM, the Prime RIBS team provided a wide variety of well prepared entrees, desserts, salads, fresh bakery products, and even soft serve ice cream which bolstered morale tremendously. This unblemished record of outstanding performance under the adverse conditions was a direct result of the superb cooperation between engineering and services people. They clearly demonstrated what can be accomplished when a mission is clearly defined and team spirit prevails. This type of cooperation was repeated throughout the entire exercise. The other two special purpose shelters were the shower unit and its partner, the latrine. Each of the three shower units was equipped with eight shower heads and eight sinks with lights and 110 volt electricity outlets. Each of the five

latrines had 12 flush toilets and two sinks. Both types of oil-powered units have hot and cold water. The kitchen, showers, and latrines led us to believe that a sustained Air Force mission was definitely possible under adverse conditions.

However, facilities are not the only things that make an operating base in the Sahara Desert work 8,000 miles from the CONUS and 2,500 miles from the nearest USAFE supply point. Challenges not normally encountered by a BCE and chief of services were plentiful but always, somehow, solvable. For instance, the water system - the life blood in the desert - developed problems. Usual solutions like going local purchase or contract were difficult, sometimes impossible, in this environment.

The HB package contained an Erdlator water purification unit, rubber storage bladders, and a distribution system. The Erdlator was capable of producing 1,500 gallons per hour of relatively pure, chlorinated drinking water and was almost flawless in its operation. However, the supply of water for the Erdlator came from a 50,000 gallon above-ground water storage tank which was replenished by pipeline from artesian wells nine miles away. The wells, pipeline, four pump stations, and storage tank were operated by the Egyptian air force. A major problem was that the storage tank was not manned and there was no automatic shutoff when the tank reached capacity. To compound the problem, there was no effective communication between the pump stations, which were two miles apart. It became an exercise in both diplomacy and cooperation to get the system to work effectively.

The exercise civil engineer or other delegated exercise officials rode the circuit daily with the Egyptian civil engineer to assure themselves of the operability of the system. Later an exercise representative was designated to go with the Egyptian base civil engineer to Cairo and arrange for Cairo West water to be turned on after a commercial electricity disruption.

A thorny problem was the operation of the power plant. As with any support base, electrical power was a key element. At Cairo West, this power was provided by four 750 KW gas-turbine generators. Each was wheel-mounted, to facilitate disconnection and relocation. Besides the generators, the HB package contained the complete control room, primary, and secondary electrical distribution systems. The generators provided primary power (4160 volts) through the contactor control cubical (CCC) to the secondary distribution center, which converted it to 280 volts before reaching the facilities. The weak link in the system, the CCC, caused the only power failure of more than 30 minutes. It seemed to be particularly susceptible to sand intrusion, routine jostling, and DC power variations. It was this last event which caused a 12-hour failure. Although the electricians worked feverishly to correct it, the unit is sufficiently complicated with solid state modules to make fault finding a nightmare. Only through the superior efforts of these electricians was the power returned in such a short time.

A third problem along these same lines, with a potentially disastrous effect on the morale of the camp, was the maintenance of the dining hall kitchen equipment. Here again, the equipment occasionally malfunctioned due to environmental causes. Vital information regarding the operator use and maintenance procedures was gathered — a major objective of the exercise. Lessons learned included: the components of the kitchen use printed circuits, micro switches, electronic heat sensors, relays, and diodes, which appear relatively sensitive to electricity surges, wind-driven sand, and variations in the qualities of diesel fuel. Again, for reasons previously cited, when faulty components were identified, maintenance was difficult. Needless to say, it was not easy to obtain replacement parts. In spite of equipment breakdowns, all scheduled meals were served on time, a testimonial to the dedication of the civil engineering, services and Air Force Commissary Service (AFCOMS) people involved!

AFCOMS personnel were extremely important to the food service operation. AFCOMS people used one 30' X 45' X 11' shelter for breakdown and non-perishable storage and 2,950 cubic feet of chiller/freezer space for perishable storage. They coordinated weekly with food service on menus for the next Cairo West "week," a period of six to ten days between "weekends." Once the menu was established, AFCOMS ordered and received Category A, B, and C rations from USAFE. (Editorial Note: "A" rations would not be available in most contingency deployments.) Fresh produce, chilled and frozen foods were flown 2,500 miles from Ramstein AB Germany, in insulated, reusable 1,000 cubic foot shipping containers. Menus posted for the coming week seldom were affected by supply problems. AFCOMS people also received and sold Army and Air Force Exchange Service (AAFES) supplied stocks in the popular tactical site exchange. Located in another large shelter, the site exchange sold not only basics such as

razor blades and feminine hygiene supplies, but luxury items such as magazines, potato chips, assorted nuts, and even beer. Of course, the beer sale and consumption were closely controlled.

The field laundry, the last services operation to open for business, was also set up in a large shelter. It had two HB washers and dryers. Laundry drops were scheduled alphabetically by last name, providing service every eight days. When one washer's water extractor became inoperative, all site personnel still had their bed linen, military and civilian clothing cleaned once every eight days. Linen exchange employees raised their unit's level of service several times, indicating their sustained high morale. Not content with providing customers with clean clothing in the bag from a cold water wash, their mission statement, they initiated the service of either folding or placing all clothing on hangars. As soon as three commercial-type washers with three companion dryers were installed to back up the non-reparable HB washer's extractor (lack of spare parts), they established and monitored a "self-help" laundry service for anyone who wanted to wash his own laundry. While cold water wast and oil fired dryer units under field conditions required careful use and monitoring, the services people performed this mission far beyond planners' expectations.

Only one services area did not use a HB facility. Motion picture films were shown to American and Egyptian personnel on an outdoor screen as the films were available. The services staff signed a projector out of the site morale welfare and recreation (MWR) or chapel units daily prior to 7 pm start time of the single or double feature and then returned the projector after the show.

Except for the problems mentioned in the CCC, kitchen and washer units, the HB civil engineering and services assets proved to be well suited for this type of exercise. Relatively few problems were experienced with the structures and utility systems.

Since an objective of the PROUD PHANTOM excercise was to conduct a joint training exercise with the Egyptian air force (EAF), American-Egyptian cooperation was essential. This cooperation was not limited to flying activities. Contact was established with the EAF engineers and services counterparts early in the construction phase and was expanded during the operational phase. For example, when the first Air Force people arrived on June 15, Egyptians helped them clean out an unused aircraft shelter to live in until the first tents were pitched. Additionally, firefighting and crash rescue operations allowed close daily EAF/USAF contact. PROUD PHANTOM was supported by one F-7, one P-13, and two P-4 fire trucks. The EAF fire department stood simultaneous line standby with Soviet-made crash trucks. This on-duty cooperation, coupled with off-duty social activities, created a close bond of friendship between the firemen of both countries. On one occasion, a potentially disastrous accident involving an EAF F-4 was averted through the quick action of the PROUD PHANTOM fire department.

Barrier operations also required close cooperation. Cairo West is equipped with two BAK-12 barriers. Although the EAF owned and operated these barriers, PROUD PHANTOM firemen and power production people routinely assisted, and during one ten-day-period, provided most of the support for these barriers.

During the latter phase of the exercise, several areas of the aircraft parking apron required repairs. This offered a good opportunity to conduct a combined USAF/EAF repair project. Working together, a team of US and Egyptian engineers combined tools, equipment, and supplies, and repaired the failed pavement in a single day.

Two other examples of cooperation involved EAF services areas. Through pooled resources the job of clearing sand dunes from the Egyptian subsistance building was accomplished. Also, when the water pump to a rooftop water supply was inoperative, the tank was able to be refilled, again due to combined efforts.

United States service people learned the Egyptians'

services are organized more like the US Army quartermaster concept. During the last days of the operation, the Egyptian services counterparts provided hot water for heating C rations after the HB assets were packed and the remaining personnel were sleeping in tents.

These and numerous other joint activities provided the people of each organization a unique and rewarding experience in international cooperation. They also provided invaluable experience in applying creative problem-solving ideas. Many of the problems which arose were solved because of the cooperation and resourcefulness of the Egyptians and Americans involved.

Quite often, when no solution by either group seemed available for solving a problem, by combining both groups, the synergistic solution emerged and appeared obvious. For example, when frequent mid-day power failures were crippling the water pumphouses and allowing the water level in the storage tank to become dangerously low, a combination of efforts solved the problem. The Americans pumped their treated water bladders full during early morning and late evening hours while providing transportation to their Egyptian counterparts who would go to split shifts to avoid pumping during peak demand periods. Another project which could not have been accomplished by either side independently, was that of providing water lines to four Egyptian facilities. Although requiring machinery and equipment, the task was manpower intensive. Once again, host and tenant cooperated to reach the goal. American plumbers and heavy equipment operators worked side-by-side with Egyptian personnel.

With the operational phase of the exercise nearing completion in late September, activities were aimed at phasing down the operations and folding up the camp. Equipment was inventoried, vehicles cleaned, and supplies packed. In early October, the site closure team arrived. This team consisted of personnel from the 4449 MOBSS, 823 CES (RH), and individual personnel from a variety of bases. Commencing on October 4, this team began dismantling the HB facilities and preparing them for air shipment. Working long hours, they completely packed the site in only 16 days. Having dismantled their own living quarters, the team lived in tents and finally in vacant aircraft revetments the last few days before departure. All signs of the American city were meticulously erased. By October 31 the camp was gone and the site returned to the desert conditions originally found at the unimproved area of Cario West.

The lessons learned and the experience gained at Cairo West and PROUD PHANTOM are never to be forgotten. It proved that we can deploy, and do so quickly, efficiently, and effectively. It proved that we can survive and operate in an environmentally hostile area. Most importantly, it proves we have the ability and desire to work and cooperate with a host nation with whom we have had no prior contact, to sustain a rapid deployment. We all came away with a great mutual respect and feeling of accomplishment for ourselves and our allies.

E&S

Maj George C. Ehnert *is a facilities consultant in the requirements division, directorate of programs Tactical Air Command, Langley AFB VA. He holds a bachelor of sciences degree in civil engineering from Bradley University and a master degree from the Air Force Institute of Technology. He is a member of the Society of American Military Engineers and is a registered engineer in Colorado.*

Capt Ronald V. Descheneaux *is an engineering staff officer in the environmental planning division, Tactical Air Command at Langley AFB VA. He holds a bachelor of sciences degree in civil engineering from Lowell University and a masters degree from the University of Southern California..*

Capt Terrence E. Kolet *is a services management consultant in the directorate of housing and services, Tactical Air Command, Langley AFB, Va. He received a bachelor of arts in service from Pennsylvania State University, and a master of business administration from the University o North Dakota.*

by LtCol John Pellek

The strategic importance of the southwest Asian region to the United States is reflected in a national commitment to use military forces if necessary to maintain access to the nations there which supply us with oil.[1] Introduction of U.S. military forces in this region assumes an ability to cope with the unique geography, climate and culture. This, in turn, assumes an understanding and a depth of knowledge concerning the capabilities of men and machines to function.

Exercises, deployments and construction projects in, Egypt and Israel give us new insights. Engineering and services personnel gain valuable experience. The Air Force in turn develops a vast system of feedback from our people recently in the field, through which we can adjust planning, programs and objectives; improve the reliability, maintainability and availability of the equipment which we depend upon; and assess the needs of our people when operating in this environment.

The biggest new challenge that engineers have to face is water supply. Unlike most other areas of military interest, southwest Asia has only limited water, much of it salty. The solution to the engineering problem of providing water in this environment may well be the key ingredient to military success in the region. Since last August, a major joint services effort has been geared toward obtaining this much-needed capability. First a "bare bones" planning factor of 20 gallons daily per person was developed and agreed upon. After requirements were defined, the Congress, in a special appropriation, funded the Air Force for 32 air transportable water desalinization units. Called reverse osmosis water purification units (ROWPU), each machine is capable of treating fresh or salty water at the rate of 600 gallons per hour. The units will also remove all known chemical warfare (CW) agents. Our first deliveries are scheduled this summer. In the fall, hands-on training will be started at the Air Force Engineering and Service Center's Prime BEEF site at Eglin AFB, Florida. Eventually we hope to also provide training at Sheppard Technical Training Center, Texas, and to have a larger capacity ROWPU replace the Erdlator as the standard mobile water treatment unit.

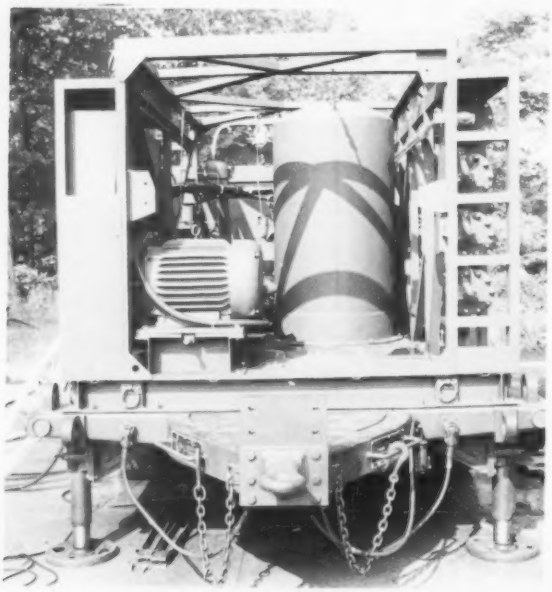
Making potable water available is not the only problem. We need an entirely new attitude toward drinking it. Medical professionals tell us that to survive and do heavy work in the temperatures found in southwest

Asia, personal consumption of from four to six gallons per day will be necessary to prevent dehydration. Training and discipline to drink water when you're not thirsty will be a must. The 1959 Israeli defense force study summed up the situation rather succinctly when it noted: " ... it was found that thirst was not a reliable indicator of dehydration and soldiers have to be taught to drink ... it is a command responsibility taken so seriously that deriliction in drinking with resulting heat stroke results in a court martial and negligence of regulations results in 35 days of prison."

Water availability and use for other than human consumption is critical. Contingency planning for any theater of operations invariably leads to a discussion of airlift resources and what can be done to reduce requirements. Southwest Asia planning presents both an opportunity and a paradox. Some of the supplies we use, like aqueous film-forming foam (AFFF) firefighting agent and "B"-rations, require airlift of a lot of water at a nominal eight pounds per gallon. So it would seem that if we could somehow dehydrate these items and others like them, some airlift could be saved. The problem of course is how to get the water on the other end.

Not only must water be viewed as an essential chemical ingredient, but the jury is still out on how prolonged useage, in a hot sandy climate, will affect water needs and reliability of our vehicles and equipment. Indications are we can expect frequent radiator overboils and a need for regular flushing of the cooling system. Each vehicle may well carry a five-gallon can of water for emergency use as standard equipment, and use of the so-called desert bag may come back into vogue. Water requirements notwithstanding, vehicles and equipment must be prepared properly for the desert. Sealed bearings and joints have been recommended, as well as daily air filter cleaning and changing the filter much more often than we are used to. In any event, all personnel will have to spend more time on operator maintenance, and the vehicle maintenance people can expect to have their hands full.

600gph reverse osmosis water purification unit (ROWPU)



The challenges to the services career field are no less difficult or interesting than those facing the engineers. Water availability impacts upon cooking, cleaning and equipment operations. Improved water processing will permit continuous operation of equipment with high water requirements. Additionally food service and Air Force Commissary Services (AFCOMs) personnel will have to be concerned about providing and preparing a menu suitable for the climate. This might indicate frequent light meals, perhaps served in the cooler night hours. Special care will have to be taken to insure that proper amounts of salt, potassium and other minerals are provided. A sensitivity to the religious dietary restrictions of the southwest Asia nations may influence or restrict standard menu choices. Purchase and perparation of locally grown fresh foodstuffs might prove interesting.

Even the best-planned balance of water-intake, proper diet, and activity levels appropriate to the time of day can be negated by improper attire. Our uniforms require examination and assessment. Standard fatigues may be too warm for wear, and the heat-absorbing, dark-colored jungle camouflage pattern of the lighter-weight utility uniform probably makes it unsuitable for desert areas. Jungle boots were excellent for wear in southeast Asia, but there has to be a good reason why the standard footwear in southwest Asia is the sandal. All personnel who work outdoors will need ventilated gloves to protect their hands from hot metals and other surfaces.

The few ideas mentioned are by no means a complete list, nor do I think I could produce one if I tried. That's where you come in. We have talented and intelligent people in the engineering and services business, and we in the planning end of it need your help. If you come across a problem that needs to be worked out or have an idea on how to solve one, contact AF/LEEPP, Washington, DC 20330 or the center's readiness group, HQ AFESC/DEO, Tyndall AFB, Florida 32403. Southwest Asia does indeed present new challenges — together we can meet them.

President Carter's state of the union address, 1980.

Lt Col John Pellek *is chief, programs and resources branch programs division (AF/LEEP) of the Directorate of Engineering and Services headquarters Air Force. He holds the bachelor's degree in civil engineering from Newark College, Newark N.J., earned in 1963; and was awarded the master's degree in industrial engineering from Texas Tech University in 1967. He is a member of the Society of American Military Engneers.*

Directorate of Engineering and Services

Current Emphasis

a brief commentary on significant developments

NEW FIELD FEEDING FACILITY--An improved field kitchen was tested at the TEAM SPIRIT exercise. The kitchen will require fewer personnel to support it and will provide a level of service equivalent to other systems in current use. (AFESC/DEHF)

ENERGY CONSERVATION--A booklet titled "Energy Conservation for Airmen Dining Facilities" was distributed in December 1980 as Food Service Letter 80-14 (distribution limited). This is an awareness guide containing operating procedures and hints for energy conservation. It will be published as AFP 146-21 (Publications Bulletin #3, Feb. 3, 1981). (AFESC/DEHF)

AFR 146-14, CONTRACT FOOD SERVICE--This regulation dated Feb 17, 1981, supersedes AFP 146-14. Providing policy and guidance on food service contracts, it is intended primarily for use by food service officers. (AFESC/DEHF)

TA 504--The new table of allowance, TA 504, Food Services, dated Feb. 1, 1981, has been distributed to the field. (AFESC/DEHF)

INSTALLATION RESTORATION PROGRAM (IRP)--Implementation instructions for the records search phase of the IRP have been forwarded to MAJCOMs. Command programming actions should insure that records searches for all installations included on their priority list (other than routine) be completed by the end of FY85. AF/LEEV has identified this requirement in the FY83-87 development plan. (AFESC/DEVP/AUTOVON 970-6189)

EXPLORATORY DEVELOPMENT PROGRAM--The engineering research division has initiated an exploratory development program designed to build a technology base in support of the Air Force readiness mission. Current studies include laboratory and analytical investigations of soil reinforcing and defining blast parameters from high explosive charges detonating in soil near hardened structures. A full complement of engineering research in survivability, readiness and day-to-day operations is planned for the next five years. (AFESC/RDC/AUTOVON 970-6299)

FOD STUDIES--In a post-attack environment aircraft operating surfaces may have problems with surface-induced foreign object damage (FOD). AFESC/RDCR has initiated a study evaluating FOD-causing mechanisms pertinent to aircraft operations over these surfaces. Preliminary tests began at the NASA test track in March 1981 to determine the debris spray pattern from an aircraft nosewheel traversing test sections with loose surface aggregate up to 2 inches in size. (AFESC/RDCR/AUTOVON 970-6328)

AERIAL DAMAGE ASSESSMENT--A research and development project to improve post attack rapid runway repair is one step closer to reality.

The aerial reconnaisance and ground analysis system was validated in December of 1980 and is now being transitioned to Aeronautical Systems Division for full-scale development and production. (AFESC/RDCR/ AUTOVON 970-6306)

HALON 1211 FIRE EXTINGUISHERS--AFESC has identified commercial fire extinguishers to replace the existing chlorobromethane (CB) fire extinguishers (A-20) now in use aboard AF aircraft. A purchase description is being prepared for Warner Robins Air Logistics Center, Robins AFB, Ga. Phase out of the A-20 extinguisher should be completed by FY85. (AFESC/RDCF/AUTOVON 970-6287)

AUTOMATING JOB ORDERS--The phase II test to automate job orders with the work information magement system (WIMS) begins this summer at Eglin, Barksdale, MacDill, and Columbus AFBs. The stand-alone system will be demonstrated on micro-processing equipment. CRTs and printers will be located in the customer service and service call areas. Another CRT is used "at large" within the BCE organization. The system replaces the manual job order log, prints the 1879 job order, displays instant status on CRT screens, provides a daily schedule, provides reports on status, completions, trends, and much more. Added will be the capability to track work requests, work orders and design schedules. Our target date for individual bases to begin implementing the system (using local funds) is in early 1982, based on equipment specifications and software to be provided by HQ AFESC/DEMG. We plan for Air Force-wide implementation to begin in FY 1983. (AFESC/DEMG/ AUTOVON 970-6378)

SEWAGE TREATMENT ODORS--Odors of hydrogen sulfide (H_2S) are given off by wet wells and sewage plants. Slow flow rates and summer temperatures combine to generate the foul-smelling gas. Diluted ferrous sulfate ($FeSO_4$) will convert the hydrogen sulfide and reduce the odor. Also, it reduces phosphorous content at the plant and decreases algae bloom in the secondary clarifiers. (AFESC/DEMM/AUTOVON 970-6353)

ELECTROCUTION HAZARDS--Electrocution is an ever present hazard. In 1979, for example, there were 1,224 men, women, and children electrocuted in the United States. Commands should stress actively the importance of electrical safety considerations in the design phase and on the construction job site. (LEER/AUTOVON 279-4082)

BASE REAL PROPERTY UTILIZATION AND GSA SPACE--AFR 87-20 requires continuous review of the requirement for occupancy of GSA space, with the objective of consolidating offices or relocating AF activities to available space on military installations. Therefore, base facilities boards should assure optimum utilization of all base facilities and the identification of any space which can be made available to house military activities currently in GSA space. (AF/LEER)

O&M PROGRAM--There is a sizeable increase in O&M funding for facility projects by contract in the President's FY82 Budget. The increased funding is intended to reduce the backlog of maintenance and repair on real property. Bases should start designing projects now in anticipation of a signficantly increased O&M facility project program in FY82. (AF/LEEPP)

Readiness
a bird's eye view

by Lt Ellen C. Ernst

While Congress debates whether to allow women in combat, women in the military are finding themselves more and more in "combat support" positions which, in effect, require the same preparation (body and mind) as do direct combat positions.

One particular group of military women who have suddenly found themselves within a combat support role are women in civil engineering and services. Now that Prime BEEF and Prime RIBS have gone from small, deployable forces from each squadron to completely deployable squadrons, everyone (with few exceptions) is eligible to deploy with very little notice.

As readiness becomes an increasing part of our lives, we, as women, need to adopt a frame of mind that allows us to assume this new role. In the meantime, my pragmatic nature emerges, and I see that as long as women are part of civil engineering and services, we must realize that readiness is as much a part of our lives as unstopping toilets or writing specifications. In fact, after having spent over a year in mobility, I feel it's the most challenging and exciting part of our job.

Prime BEEF and Prime RIBS are stepping up their training to meet the needs of our enhanced mission. As a result, we should expect to participate more and more in exercizes and contingencies. Ladies, "be prepared," may be a worn out motto, but here it really helps. Let's have a look at some of the basics.

Family

If you have children and are single, or have a husband who is also military, make arrangements for a friend or neighbor to take your children, with the understanding that it may not always be convenient. If you get one of the squadron spouses to do it it will help a lot, because chances are she will be aware of the situation. Have a package prepared for the person accepting your children that will help him/her make arrangements with friends or relatives to take the children in the event that you must actually deploy. Even if you live by yourself, ask someone to keep an eye on your place, get your mail, feed your pets, water your plants or to leave a check so your rent will be paid. Also, make sure all of your records are up-to-date, so if anything happens to you, there won't be too many hassles.

Dunnage

There are several categories to this. The important thing is to have as much as possible packed and ready to go at all times. Have a packing list in the pocket of your duffle bag so you know what's there, and what last minute items need to be packed. This way you're less likely to forget something important. Some overall advice: take only what you can't do without for 89 days. Pack as light as you can, and pack at least what you are asked to take for deployments. You'd be surprised what you can do without. There have been cases where personnel have gone through the processing line with a bag full of crumpled newspaper or dirty laundry only to discover they were actually deploying!

Clothing

If you can afford to, duplicate as many of the clothing items as you can and prepack them. T-shirts, socks and underwear and towels are the cheapest and easiest to keep packed — and it's a good start. Also, these are the items that tend to accumulate in your laundry pile — and if your luck is anything like mine — you will literally have only laundry to pack. I got to the point last year where I kept fatigues marked for cleaning on hangers, just in case a recall would call them to emergency duty. Maybe they weren't so pleasant, but at least they didn't look like they'd been pulled out of the laundry.

Toiletries

These you ought to pack ahead of time. That way you don't forget something important at the last minute. And, if you have to rob something during a household emergency, replace the item as soon as possible. Also, make an effort to reduce the items you might require to a bare minimum. For instance, take a soap that can be used interchangeably for hair, body, clothes and dishes — that way, you have one bar or bottle instead of four. Take one kind of cream — all purpose. Select an odorless emolient cream that does not contain mineral oil, petroleum products or fragrances. This will minimize attraction of insects and skin aggravations. It's about the only thing that will take off camouflage paint without bringing a layer of skin with it. Shop around for things that are concentrated, or that come in small packets; whatever you might need that takes up very little space. One lifesaver for me on my recent field training exercise was a package of pre-moistened towelettes; it was the easiest way to wash my face and hands before and after meals and there was no soap and water to contend with.

There are a few items you should be sure not to forget:

- Insect repellent — bugs, gnats, etc. can be awfully distracting.
- Chapstick to keep your lips from cracking.
- Sunscreen if you burn easily.
- Feminine hygiene items — especially tampons or sanitary napkins. Your body is not likely to stop functioning just because it's inconvenient.
- Toilet paper. C-rations pack some TP; but, you don't always get C-rations. Besides, the average open air latrine does not have maid service.
- Twine, tacks and hangers. If you have the opportunity, you may want to hang up some items — even if only to dry them.

Food Suppliments

Most of us have a particular pattern of eating that has been established for some time. Break that pattern and minor discomforts will occur (like diarrhea or constipation) that make it hard to work at 100 percent. So, to avoid this problem as much as possible, take things that will help rations to meet your nutritional needs. At the very least, take some vitamins (you won't get any vegies unless there is a field kitchen) and some high calorie food energy bars. Find one that tastes good to you — there's one for practically everyone. The best way is to look at the food suppliments a back-packer will take. Since they carry everything, they must, by necessity, carry light, compact items. Even now, manufacturers are attempting to meet their market by dehydrating more and more foods. These take up so little space and weight, I was able to pack a complete six-day food supply in a shaving kit bag.

A Good Attitude

If you forget to take this along, you'll be in a world of hurt. Military personnel in engineering and services exist to respond quickly and effectively to any kind of contingency. Our everyday job is one in which we become familiar, in order to be able to do it in an unusual situation. So we must be aware that being mobile is our job — not just something we do for the inspector general. Or, look at it this way: an attitude, good or bad, can rub off on others. With a good attitude, work can get done faster, better and perhaps graciously, even under the most austere conditions. A smile and a good word does wonders for your morale, and for the morale of those around you.

Conclusions

Women in engineering and services need to get mentally and physically prepared to go anywhere, anytime in response to any kind of emergency. So let's get ready!

Lieutenant Ernst *recently received her navigator's wings and is currently attending advanced navigator training at Mather Air Force Base. Prior to flying training, she was a civil engineering officer at McChord AFB for 2½ years. She received a bachelor of architecture degree from Carnegie-Mellon University. She is a member of the Soceity of American Military Engineers.*

EXPLOSION . . . CONCRETE AND EARTH SPEWING . . .

North Field

meeting the Triple R challenge

By Lt Col Robert E. Boyer and Philip T. Nash

The hot August sun starts to appear and as emerges around a desolate, small airfield as a routine day begins. Suddenly, a tremendous explosion sends concrete and earth spewing in all directions. When the smoke and dust clear, a gaping crater is found in the runway surface surrounded by piles of rubble blocking the pathway to launch aircraft. In addition, simulated damage to the runway is extensive, including potholes from rocket and cannon fire, numerous craters, and a variety of unexploded bombs and other ordnance strewn about the airfield. Quickly, an Air Force damage assessment team, dressed in chemical warfare gear, arrives on scene to start an exceptionally realistic test of rapid runway repair (RRR) techniques by the Air Force Engineering and Ser-

vices Center (AFESC).

Potential enemies have devoted much effort to design weapon systems and tactics to prevent U.S. aircraft from operating in the event of war. In the past, fighter aircraft were stored in the open and were extremely vulnerable to straffing attack. Following valuable lessons learned from the 1967 Mideast conflict, an evolutionary aircraft shelter hardening program began. Protecting aircraft with shelters was effective and caused the threat to shift towards attacking the mission-essential runway launch and recovery surfaces. Sophisticated U.S. aircraft and weapon systems are useless in any conflict if they are unable to get off the ground. During the sixties, the U.S. Air Force recognized the need to be able to rapidly repair damaged runways and launch aircraft soon after an attack. Using post-World War II technology, procedures were developed that were capable of repairing a limited number of craters to meet the perceived threat at that time. However, the threat grew tremendously, and soon RRR procedures were faced with a variety of challenges: 1) increased number of craters; 2) less time for repairs; 3) difficulties in determining which craters to repair first; 4) possible chemical warfare environment; 5) possible aircraft damage while operating over repairs; and 6) unexploded ordnance.

Again, the Air Force recognized the challenge and outlined a nine-year research program to provide the capability to launch tactical aircraft within five minutes after an attack and to prepare a suitable expedient runway that can sustain limited operations within one hour. AFESC is currently in the fourth year of the RRR research program and has made significant headway toward meeting planned goals. However, operational commands are faced with an enormous threat at the present time, and cannot depend on past capabilities until future systems begin entering the field in 1986. Periodic improvements must be transferred to the using commands as they become available. Testing at North Field provided an appropriate means of demonstrating the current status of RRR, transferring recently developed technology to the users, and previewing future concepts under development.

The RRR program is designed to meet this challenge through a systematic approach which includes four technical areas: post-attack environment, alternate launch and recovery, bomb damage repair and surface roughness.

Post-Attack Environment

Extensive damage to the airfield can be expected following an enemy attack. In most cases, only a portion of the airfield is required to launch and recover aircraft. Assessing airfield damage determines which portion of the airfield can be quickly repaired, and identifies any hazardous ordnance or chemical environment endangering repair crews. Current damage assessment methods involve personnel in chemical gear visually inspecting the airfield and reporting their findings to the survival recovery center (SRC). The RRR program is developing automated systems which will electronically record and relay damage information to a ground-based minicomputer programmed to help optimize recovery operation plans. At North Field a candidate airborne system was demonstrated using a modified Cessna 180 aircraft.

Alternate Launch and Recovery Surfaces

An attractive method to increase chances of launching aircraft immediately after an attack is to construct inexpensive contingency surfaces capable of supporting limited aircraft operations. Providing a much larger area with launch possibilities requires the enemy to dilute his attack and increases the odds of locating an undamaged portion of the airfield large enough for aircraft to takeoff and land. At North Field a concept for future contingency launch surfaces was installed and loaded with simulated aircraft traffic.

Bomb Damage Repair

Methods developed during the Sixties for repairing craters larger than 40 feet in diameter are still applicable for large craters today. Present and future threats now include many smaller craters 20 feet or less in diameter. The RRR program is developing techniques to accomplish the necessary repairs to the original runway surface and support sustained aircraft operations. One interim method is the crushed stone repair, replacing debris thrown from the crater to within a specified depth below the original runway surface. Selected crushed stone is compacted to fill the upper portion of the repair. A thin membrane covers the repair to prevent damage to the aircraft from dislodged repair stones. A major objective of North Field test was to demonstrate and validate the crushed stone method which would meet the interim requirements for small crater repairs and could be used as a substitute for large crater repairs. Methods for quickly repairing potholes from rocket impacts were also demonstrated.

Inert bombs were used to simulate unexploded ordnance in post attack environment.

Surface Roughness

RRR program contingency or repaired surfaces must not pose a hazard to operating aircraft. Excessive surface roughness may damage aircraft tires, structures, personnel or pylon-suspended weapons. RRR "HAVE BOUNCE" research is analyzing and testing a number of aircraft to determine surface roughness tolerance levels. Based upon aircraft response predictions by the

Air Force Wright Aeronautical Laboratory and results from extensive testing at the flight test center, both F-4E and C-130 aircraft demonstrated landings and takeoffs, rolling over repaired and unrepaired bomb craters, cannon and rocket potholes.

Base Recovery After Attack

Recovering an airbase after attack is an extremely complex operation. Detailed procedures have been established to integrate the activities of teams removing unexploded ordnance, repairing the airfield and coordinating the recovery efforts. When Tactical Air Warfare Center (TAWC) recognized the North Field test as an excellent opportunity to evaluate RRR-developed procedures, the scope of the North Field test was expanded to a full spectrum exercise involving a realistic scenario with fully trained teams and actual recovery equipment.

Supporting the Test

North Field was chosen as the test site because of its isolated location and high quality 500 x 10,000-foot runway surface, adequate for all aircraft operations,

One alternate launch and recovery surface test section sustained more than 400 passes of the F-4 load cart.

with some sections closely matching many asphalt-overlayed runways in Europe. Nestled in the South Carolina countryside, North Field was excellent for the required explosive operations. Extra precautions were taken to insure there would be no adverse effects to the nearby farming community.

Planning and preparing for the North Field test was an enormous undertaking. The test site belongs to the 437th Military Air Wing (MAW) at Charleston AFB. Directors at the 437th MAW recognized the positive value and importance of the North Field test and, worked diligently to provide essential support throughout preparation and testing. The first planning meeting for the North Field test was at Charleston AFB in November 1979. The 437th MAW set the mood by stating, "tell us what you need and we will do what we can to help." That vital help included support from logistics, operations, civil engineering, safety, audio-visual services, and other organizations which provided expertise and equipment. That spirit of cooperation permeated the entire planning group. Nearby Shaw AFB worked equally as hard providing equipment, support, and repair team personnel who worked at an unbelievable pace setting the stage, performing repairs, and cleaning up during the exercises. Support for the North Field test was literally nationwide from a number of organizations.

In two separate exercises, realistic post-attack damage was simulated around the airfield. Each exercise began with an ammonium nitrate-fuel oil (ANFO) explosive charge detonation forming the craters. Producing charges on site prevented danger in transporting the explosive materials to the test site. The precisely mixed charges were used to produce two craters with open diameters of 25 and 37 feet. Upheaved concrete surrounded each crater and pieces of broken concrete were thrown hundreds of feet.

Sirens sounded to alert repair teams! The attack was over and work could begin. According to procedure, damage assessment teams approached the runway dressed in chemical gear not knowing if chemical weapons had been used in the attack, or not. A part of the team tested the environment to see if chemicals were present.

A variety of simulated damages and dangers were identified, including craters, hundreds of potholes, unexploded 500 and 250 kilogram bombs and a number of smaller munitions. Teams included an explosive ordnance disposal technician trained to recognize types and evaluate conditions of threatening weapons, a civil engineer trained to evaluate the airfield condition, and two augmentees to assist in recording damages and relaying information to the SRC for plotting on airfield maps. Maps were studied by the base commander and his staff in the SRC. They selected the portion of the damaged airfield which is to be repaired and used to launch and recover aircraft based on personnel safety, aircraft safety (based on "HAVE BOUNCE" information) and expediency of repair.

As soon as the launch surface was selected, explosive ordnance disposal teams cleared the pathway of unexploded bombs and submunitions. Bombs were defused or rendered safe and moved from the runway surface. Submunitions were carried from the runway surface in soil-filled boxes and pushed to the side using a front end loader. Normally ditches are dug beside the runway for burying the submunitions. Because the North Field runway is wider than normal, submunitions were carried only to the edge of the asphalt covered portion of the runway and placed as if they were being buried. Otherwise, the teams would have been carrying the submunitions distances unrealistic to the European scenario.

Runway repair operations began when the hazardous ordnance was removed from the minimum operating strip and access pathways. Although future improvements will harden repair equipment to survive detonations of nearby weapons, current equipment is extremely vulnerable to explosions. After repair equipment moved to the crater site to begin operations, graders, front end loaders and dozers cleared debris from around the craters and provided an area for stockpiling crushed stone at the crater site. Debris was placed into the crater and the upper portion of the repair

was filled with two feet of the crushed limestone material.

Simultaneously, dump trucks began transporting the crushed stone from the aggregate storage, stockpiling at the repair site until required in the repair process. Excessively upheaved concrete at the crater edge was removed using a front end loader or dozer blade, dozer ripper tooth and jackhammer. A reference string was stretched across the repair to insure the 2-foot depth required for the crushed stone backfill.

Stockpiled crushed stone was pushed into the crater by front end loaders or dumped directly from the trucks. The crater was overfilled approximately six inches to allow for compaction. Once the crater had been filled with crushed stone, compaction using the vibratory roller began. Four coverages of the vibratory roller were used as initial compaction. The stone was then releveled by the grader to approximately 1-1/2 inches above the surface. After releveling an additional 28 coverages by the vibratory roller were applied to the repair bringing the total number of coverage to 32.

The reference string was then used to measure the quality of repair for surface roughness. At North Field, aircraft safety required repairs to be of very high quality. Areas of the repair outside a 1/2-inch tolerance in either sag or upheaval were marked and releveled as necessary.

As an expedient safety precaution, a T-17 nylon-reinforced neoprene membrane was used at North Field to cover the repair and to protect against foreign object damage (FOD) to aircraft tires or engines. As the crater was prepared for the backfill operations, the T-17 membrane was brought to the repair site, unfolded and positioned for placement. Steel plates were used to secure the membrane to the runway surface at the leading and trailing edge of the crater with respect to aircraft traffic. Holes drilled into the runway were filled with a quick-setting molten lead-sulfur compound to anchor bolts which passed through the plates. Other FOD cover concepts are being studied and developed.

Based upon "HAVE BOUNCE" test data, potholes in the runway surface deeper than 1 1/2-inches required repair. Compressed air was used to remove loose material, dust and moisture from the potholes. A quick-setting patented polymer concrete, Silikal, was used to fill in potholes. Liquid hardener is mixed with the powder catalyst and pea-gravel in a polyethelene mixing bag. Contents were mixed thoroughly and then placed directly into the damaged area. The mixture set in 20 minutes after troweling flush with the runway surface. Mixture hardening times vary according to temperature and surface conditions.

An F-4E load simulator cart was used to strength test the crushed stone repairs. The load cart was equipped with an F-4 tire inflated to 265 psi pressure, loaded to 27,000 pounds, simulating 100 passes of a combat loaded F-4E aircraft before the first actual aircraft operations.

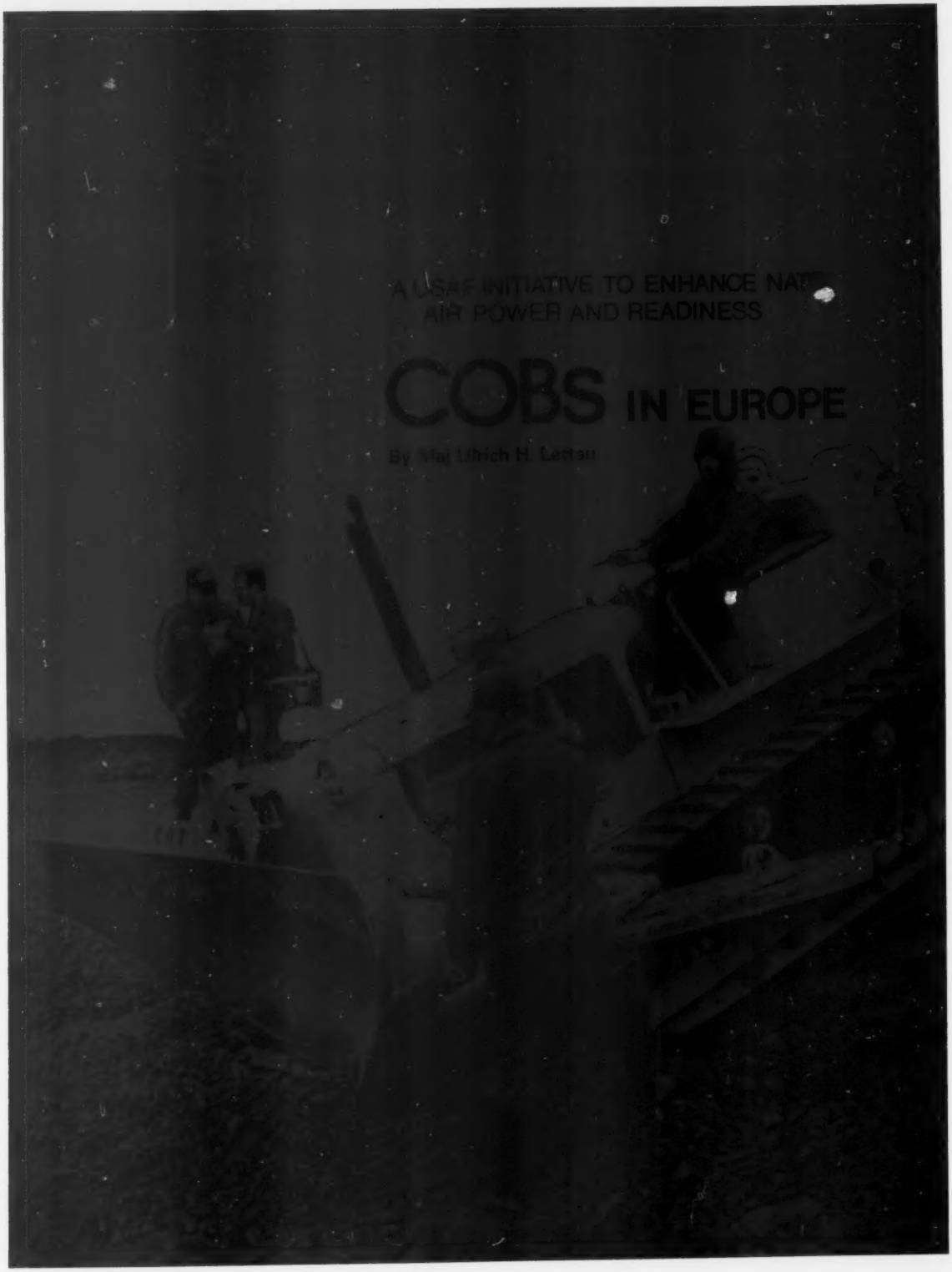
Actual aircraft operations came after exhaustive analysis and loadcart testing proved the crushed limestone technique would support simulated aircraft traffic. Extensive "HAVE BOUNCE" testing had built confidence in predicting aircraft responses to simulated craters. North Field was the first operational aircraft encounter with real craters repaired with RRR techniques.

The mood was tense as the F-4E positioned itself at the start of the first taxi run. Research was on the line as the aircraft thrust forward! First, aircraft pylons dipped slightly as the aircraft encountered repaired and unrepaired potholes. Next, the aircraft traversed the two repaired craters with almost negligible response. After the pilot reported encountering the bump created by the steel plates holding the FOD cover bomb damage repair, experts rushed to inspect the repairs. The repair suffered no noticeable effects! Aircraft test engineers quickly inspected aircraft response recordings and found actual responses matched predictions. After two more successful taxi runs, the F-4E prepared to takeoff over the taxi test-proven repairs. Takeoffs tested the FOD cover's resistance to the engine afterburner blast. Test planners, participants and visitors watched anxiously as the 53,000-pound aircraft encountered the first crater at 45 knots and the second at nearly 90 knots. Dust blown from the simulated craters obscured the aircraft from view as the engine noise increased. Finally, the aircraft lifted from the runway surface. At the same moment, test engineers and planners leaped with the joy of success. Both the aircraft and the repair were completely undamaged. Subsequently, more than 50 actual instrumented F-4E and C-130 aircraft operations over repaired craters were completed. In addition, load cart testing simulated more than 1,400 aircraft passes across the craters with only minor maintenance required. The large crater repair was instrumented to correlate the dynamic aircraft traffic loads to the static loads from the load cart.

Concepts for future capabilities in RRR were also demonstrated at North Field. While the damage assessment team manually surveyed the airfield, the small Cessna aircraft flew over the airfield collecting damage imagery with a camera sensor. Imagery was printed on hard copy fiberoptic recordings and analyzed to reveal damage to the runway and unexploded ordnance scattered around the airfield, comparing favorably with black and white and infrared photography taken by an F-4 reconnaissance aircraft.

Three stabilized soil test sections were installed at North Field by personnel from RED HORSE. These future concepts for an alternate launch and recovery surfaces were trafficked with the F-4 load cart. One test section sustained more than 400 passes of the F-4 load cart with negligible effects, thus demonstrating the feasibility of constructing contingency surfaces.

In conclusion, the objectives of the North Field test were achieved. The procedures validated during the test provide our teams in the field with interim techniques for a "now" post-attack launch and recovery capability. These procedures are presently being incorporated as an annex to AFR 93-2, "Base Recovery Planning," which is scheduled for distribution to the field in 1981.


A USAF INITIATIVE TO ENHANCE NATO
AIR POWER AND READINESS
COBS IN EUROPE
By Maj Ulrich H. Lettau

Collocated operating bases or COBs are allied military installations employed as beddown locations for reinforcement units deploying from the continental United States (CONUS). Employed by the United States Air Force in Europe (USAFE), the concept avoids the expenditure of literally billions of dollars in fixed installations costs, with follow-on savings of millions of annual operation and maintenance (O&M) dollars.

Aircraft committed to support a NATO contingency fly directly to COBs located in NATO's northern, central, and southern regions. Each COB has the facilities and war reserve material (WRM) to receive, service and launch these aircraft on productive combat sorties in the shortest possible time. COB selection criteria are strict enough to insure that this mission generation capability is present, or that it can be made available.

The rapid turnaround of reinforcements and the geographic dispersal of aircraft are key aspects in the COB rationale. The concept eliminates the requirement to put a complete support element in place as well as the time necessary for that support element to attain capability to receive and launch aircraft. The COB allows missions to be flown even while the majority of the support forces are still enroute. Both engineering and services have significant roles since housing, feeding, and emergency construction or repair are essential. Most COBs can support the initial influx of personnel and equipment, but require augmentation to sustain the full deployment. The concept was developed to establish a capability to strike back in strength, in a matter of hours or days, rather than in a matter of weeks. By eliminating the necessity for a complete support organization to precede the combat force, our defense posture is thereby realistically enhanced.

DEVELOPMENT OF THE CONCEPT

The COB concept provided a means of reducing vulnerability while at the same time supplementing the effectiveness of the overall NATO capability. In the early 1970s, analysis of wartime threat highlighted survivability measures, including aircraft shelters and facility hardening. The protection of in-place forces proceeded rapidly; similar protection of reinforcement aircraft became seriously deficient since the deploying forces would have doubled or tripled the aircraft loading at the main operating bases (MOBs).

Aside from the obvious real estate shortage, the overloaded MOBs present lucrative targets. The aircraft density at allied air bases is approximately 50 percent less than our peacetime MOB loading and a large number of the bases have excess capacity. The critical factors in selection of these bases are the availability of munitions, petroleum, oils and lubricants (POL) storage, dispersed parking, operations and maintenance facilities, communications, billeting and messing facilities. A COB's wartime utility is a function of the facilities available, the augmentation required, and the geographical location with respect to offensive and defense theater operational requirements.

The concept is an overwhelming success tested by deployments of active, reserve and national guard units to various allied bases. Operationally, a unit arrives at a COB fully prepared for an expeditious change of operational conrol to NATO. Support from the host nation makes mission readiness possible long before the unit's full support package catches up with the operational element.

The augmentation element is composed of specialists in communications, operations support, munitions, fuels, security, maintenance, civil engineering and services, and other base support forces. The sustained capability is established as additional USAF support personnel deploy to the COB, reinforcing the host nation support. This is still required as the host base is manned primarily to sustain its own forces under wartime sortie generation rates. The initial composition of U.S. forces arriving at a COB is determined by subtracting the host's capability from the total USAF requirement. The range of services and the extent of support required at a specific COB is tailored to the location and is specified in a series of agreements with the host nation.

AGREEMENT CYCLE

To formalize relationships and responsibilities, the initial step was a bilateral memorandum of understanding (MOU) between the host nation and the U.S. governments. It broadly states the conditions of COB employment, reserved rights of ownership, and controls and financial obligations. Technical arrangements (TAs) define various responsibilities and specifics for each COB, and the facilities to be made available by building number and square footage. After the TAs are signed by the host nation and USAFE representatives, a USAFE main operating base is selected as a sponsor for the individual COB. The sponsor base staff and host base staff then collectively develop a joint support plan (JSP) detailing the procedures and concepts of operation to be used in receiving a USAF deploying force.

Each JSP has one annex that assigns tasks and responsibilities to a sponsor base for a reception team which acts as the interface between the host base and the incoming unit. The civil engineering annex addresses preparation of designated facilities, emergency or contingency actions, development of tent cities or other interim facilities, augmentation of host fire departments and rapid runway repair teams (as required),

the establishment of emergency utility systems, and the erection of protective structures. The services annex involves specific locations and buildings for billeting, arrangements for messing, ration sources, and food service augmentation.

FACILITY DEVELOPMENT

While the availability of space in host nation facilities is a major factor in COB selection, there are certain critical facilities that are not normally in excess and are required for a base to support the beddown squadron in combat. These are categorized as minimum essential facilities (MEF) and include ammunition storage igloos, POL storage tanks and fillstands, and dispersed parking hardstands. Accordingly the development of these facilities at COBs is an extremely high USAFE priority and is being programmed through both the military construction program (MCP) and NATO infrastructure programs.

The second phase of facility development is airfield survivability measures (AMS). Included are third generation aircraft shelters, semi-hardened facilities including squadron operations (to include communications), POL truck shelters, liquid oxygen storage and a munitions maintenance or air-photo interpretation facility (depending on the misssion). By its nature, the $16-25 million per base ASM package is four to five times as expensive as the MEF, and is now programmed exclusively through NATO. The ASM requirement varies with the number of facilities that the host base can commit to our wartime use and is programmed only for a specific group, based on the category of assignment of the unit to NATO. Essentially the shorter the closure time, the higher the units' NATO priority is for infrastructure construction. Reinforcement units are fully NATO eligible for both MEF and ASM, including rapid reactor (RR), Supreme Allied Commander/Europe strategic reserve (SACEUR/SSR), and ready reinforcement (RE) in that order of priority. Forces that are earmarked (EM) for NATO are selectively eligible and are being considered for future MEF funding, but in the meantime base are brought to minimum essential facilities standards through the MCP.

As these facilities are completed, maintenance requirements are identified by the sponsor base. The COB TAs specify that maintenance of completed facilities for our sole use is accomplished by the host base with reimbursement from the U.S. Other facilities, those that are to be provided by the host and those for joint use in peacetime, are maintained by the host at no charge to the U.S. The total cost of the program is then entirely for mission essential structures, with no cost for the usual collateral support functions. This maintenance management workload can be expected to increase significantly as the construction program progresses toward overall completion.

ENGINEERING AND SERVICES INVOLVEMENT WITH COBs

The BCE COB officer has the most important and critical base level job, responsible for a variety of COB related-subjects ranging from construction management to JSP developmment. A list of major duties include:

* User surveillance or contract inspection for all construction, maintenance and repair projects.
* Participation in all predesign, design and planning conferences.
* Being knowledgeable of the facilities and the conditions at each individual COB.
* Awareness of specific mission requirements and the current and planned beddowns.
* Monitoring all maintenance and repair requirements and activities.
* Budgeting for all COB engineering and services funds requirements, such as TDY, maintenance, WRM, etc.
* Participation in all phases of the COB JSP planning cycle.
* Membership on the COB reception team.
* Representing the services function at the COB and coordinating services input to the JSP.

COBs provide third generation aircraft shelters.

* Participation in exercise planning and incorporation of exercise lessons learned in the plans.

The BCE COB officer at the MOBs is a dedicated position that was authorized to implement and manage the COB program. Services analysis, requirements, and recommendations are administratively input into the JSP. Services retains the responsibility for billeting and messing but in most cases acts through the BCE COB officer.

The COB program is centrally managed at the headquarters level for a variety of reasons. First, the flexible nature of missions, beddowns and requirements virtually demands a single manager with the ability to rapidly adjust programs, as changes are required. Second, the long range aspect of the program, the numerous types of aircraft involved and the number of nations included introduce consistency and coordination requirements that would be unmanageable if 12 or more MOBs were individually responsible. Finally, the host nation contribution in the facilities area allows concentration of effort on MEF and ASM, enabling a relatively small group to adequately monitor an extensive program.

PRIME BEEF AND PRIME RIBS

The functions described to this point primrily involve peacetime actions in preparation for COB activation. Should reinforcement of NATO become necessary, wartime augmentation by Prime BEEF and Prime RIBS will be a reality. Virtually every team in the CONUS has a combat role in Europe with a high percentage going to COBs.

Both Prime BEEF and Prime RIBS will integrate to the extent possible with counterpart host nation units to support the NATO mission. Engineers will accomplish bomb damage repair, interim and protective construction, base recovery and other tasks related to launching and recovering aircraft. Services Personnel will feed and house the U.S. contingent in the best manner possible.

Successful execution of these tasks is highly dependent on well written JSPs, written from the point of view of the deploying team. This type of planning and the appropriate training are keystones in USAF Prime BEEF and Prime RIBS readiness.

CONCLUSION

The value of the COB program rises with the need for force survivability, primarily through geographical dispersal, facility hardening and base recovery measures. COBs fulfill dispersal criteria, and facility hardening is being constructed. Through the combination of host nation efforts and USAF Prime BEEF augmentation, base recovery capability can be improved. The number of aircraft dedicated to NATO cannot be supported through the existing main operating base structure. A viable alternative is to deploy to collocated operating bases. A small MOB such Zweibrucken AB in Germany had an acquistion cost of over $50 million. The current adjusted value could be conservatively estimated at $300 to $400 million. Deducting support and dependent facilities could bring the price down to $150 to $250 still more than 10 times the cost of MEF and ASM on the average COB. Annual facilities operations and maintenance at Zweibrucken are in the $3 million range. This compares to the $100 to $150 thousand range for a fully developed COB. MOB maintenance costs are 10 times more than at a comparable COB.

These are realistic, estimated comparisons values and are representative of COB cost effectiveness. But monetary consideration is not the salient point, wartime utility is. Overloading MOBs with augmentation aircraft, or deploying units sequentially as attrition replacements, are not answers. Reinforcement of NATO through utilization of bare bases or unprepared and unstocked operating locations approaches a solution but lacks combat capability. The best solution today is development of operating bases, with proper facilities, pre-stocked munitions and POL, guaranteed host base cooperation with interoperability, with Prime BEEF and Prime RIBS augmentation.

Maj. Ulrich H. Lettau *is currently assigned to the requirements division, programs directorate, at headquarters US Air Forces in Europe, Ramstein AB, Germany. He earned his bachelor's degree in civil engineering from the University of Wisconsin and a masters degree in management from Troy State University. He is a member of the Society of American Military Engineers.*

ON THE MOVE

by Capt Neil H. Fravel

Did you say you like to travel? If so, you'd like to see the world? Well you just may be in the right business if you are a member of a Prime BEEF (Base Engineer Emergency Force) or Prime RIBS (Readiness In Base Services) team. Established primarily to meet our wartime engineering and services requirements, these teams have an important place in our peacetime operations, providing mobile forces for three categories of intercommand deployments:

- Supporting Joint Chiefs of Staff or Headquarters USAF-directed exercises or operations;
- Providing emergency assistance or disaster recovery;
- Providing urgent project support requested by an Air Force major command.

The readiness group (DEO) at the Air Force Engineering and Services Center (AFESC) is the air staff manager for both the Prime BEEF and Prime RIBS programs, reviewing and validating requests for engineering and services deployments, tasking appropriate major commands (MAJCOMs) for necessary personnel and equipment, and monitoring the activity of deployed teams. A brief look at some recent deployments will illustrate the diversity of the requirements which these deployments support.

EXAMPLES

A continuing requirement since 1970 has been the Air Force civic action team deployed every eight months to the Trust Territories of the Pacific Islands (TTPI). This team assists in constructing civic projects, such as roads and drainage systems, and in training local nationals in specific skills represented on the team. The current team, deployed to the Truk Island district of Micronesia, consists of an officer in charge, a senior non-commissioned officer, three equipment operators, three mechanics, a power production specialist, and a medical corpsman, selected by AFESC/DEO from volunteers nominated to AFESC/DEO through majcom channels.

Not all requirements are as easy to fill as the TTPI deployments. Because of short lead times or unusual restrictions, satisfying some requests can present unique challenges. During June and July 1980, two urgent requests were received for fire and crash rescue protection both at classified locations, necessitating quick reaction by AFESC and the MAJCOMs tasked to meet the required in-place dates. Only fire fighters with top secret security clearances and current special background investigations could be used for one deployment, severely limiting the number of eligibles. Research determined that only 17 such individuals existed in the career field and not all of these were available to be deployed. The required number was reduced from 19 to five after negotiations with the requester.

Requests for deployments can originate at almost any level of command, although most are channeled through a MAJCOM which acts as the point of liaison with AFESC. In 1980 eight Prime BEEF craftsmen were requested by the Electronic Security Command to complete renovation of the Kunian communications facility in support of the National Security Agency. On the other side of the world, a series of deployments has provided general engineering and services support to a classified USAFE forward operating location since June 1980 in response to a mission directed by the National Military Command authority.

A deployment can contribute to the quality of life of Air Force people. Project T-CUP (Turkey Catch Up) was initiated following a tour of USAF installations in Turkey by the Air Force vice chief of staff. Upgrading facilities to the standards enjoyed throughout the rest of our European bases required 14 engineers and two site developers who were deployed to four bases in Turkey for 60 days. They augmented USAFE engineers in developing the required facility improvements, which included recreational projects.

AFESC/DEO also manages the Air Force military personnel appropriations (MPA) man-day program for engineering and services, under which numerous members of our air reserve forces (Air National Guard and Air Force Reserve) are voluntarily brought on temporary tours of active duty to meet urgent, one-time worldwide requirements of the active Air Force.

In May 1980, eight reservists were deployed to assist in food service operations at the Cuban refugee center at Eglin AFB, Fla. During the past two years, air reserve forces on MPA man-days have provided the bulk of the Air Force fire protection and food service support to the JCS Team Spirit exercise in PACAF. Also guardsmen and reservists have designed projects or constructed facilities for every Air Force MAJCOM during the past 12 months.

These deployments reaffirm the mobility of our Prime BEEF and Prime RIBS forces proving that engineering and services personnel can deploy rapidly between commands to meet urgent needs as they develop. As AFESC and the MAJCOMs exercise deployment procedures we identify and begin solving problem areas. Deploying personnel benefit from the chance to travel, increased responsibility as managers or as technicians, the accomplishment of a definite goal or mission and strengthening of their confidence in their own abilities.

Deployments may temporarily disrupt daily peacetime operations, but requirements which generate them will continue to arise in the future. We exercise care in tasking to minimize the impact upon any one MAJCOM or base. Response to deployment taskings has been positive. Only rarely has a tasking gone unfilled. This can-do spirit has done much to enhance the reputation of our Prime BEEF and Prime RIBS programs and to promote the professional development and growth of our personnel. E&S

PACAF IS READY

By Capt Donald J. Webb

The definition of readiness is the ability of existing forces to fulfill assigned tasks with current resources. The emphasis is on available resources and a timely response capability. In Pacific Air Forces (PACAF), our area of responsibility covers over 100 million square miles. Readiness in PACAF means being able to support US operational forces in a multitude of climates, countries and cultures. For PACAF engineering and services, readiness means people who are willing to devote a good part of their lives to prepare for contingencies so that US forces will be able to meet any threat.

PACAF engineering and services had nearly 7,700 people assigned to PACAF headquarters in Hawaii, seven main bases in the theater, and numerous smaller operational bases and sites throughout the Pacific. To enhance our contingency capabilities, the civil engineering squadrons are organized into two in-place Prime BEEF units in Korea and three deployable Prime BEEF units at Hickam AFB, Kadena and Clark ABs. In addition, we have one deployed RED HORSE squadron in Korea. The main emphasis of this article will be on our readiness efforts in Korea and RED HORSE construction support of our readiness program.

From a peak strength of seven squadrons, with 2,800 military and more than 6,000 local national employees in 1968-69, RED HORSE presence in the Pacific has gone to one 400-man squadron (military) and 92 authorized local nationals. The 554 CESHR maintained a detachment in Korea since 1973 and was officially deployed to Osan AB in 1976, where its main headquarters is located. Since that time, it has been tasked with numerous construction projects in support of our people. But the main emphasis has been to provide facilities to enhance our readiness capability.

A large-scale effort, and a continuing one, is to provide revetments for operational and mission essential facilities to protect them against ground and strafing attacks. Starting with the revetting of the maintenance control facilities at Osan and Kunsan ABs in 1976. RED HORSE has erected over 16 miles of revetment of varying heights throughout Korea. This work has been done on both USAF and joint-use Republic of Korea Air Force (ROKAF) bases. The major facilities revetted have been hangars, maintenance shops, all operational facilities and most communications facilities. In addition, considerable revetments have been erected to protect aircraft when parked on the aprons. This has proven extremely beneficial due to the limited hardened shelters availability in Korea.

In addition to revetting, RED HORSE has been heavily involved in repair and construction projects at our Korean bases. The largest construction efforts have been at Kunsan and Osan ABs, with smaller construction efforts at Taegu and Kwang-Ju ROKAF air bases where we have joint use of the airfield. At Kunsan, RED HORSE constructed a bomb preload facility which centralizes, enhances and expedites the assembly, preparation and mounting of bombs and missiles prior to their dispatch to the flightline, ready to be mounted on the aircraft. At Osan, RED HORSE constructed a 46,000 square foot War Readiness Materials (WRM) warehouse which provides covered

Constructing revetment.

storage for essential WRM. Also at Osan, RED HORSE constructed a combat quick turn facility which centralizes, enhances and expedites the turnaround of aircraft returning from missions. This mission essential readiness initiative allows the facility to double the sortie rate of aircraft.

Since RED HORSE was deployed to Korea in 1976, it has constructed more than 80 separate buildings. These buildings vary in size from small storage buildings to the 46,000 square foot WRM building. In addition, RED HORSE has constructed numerous airfield facilities, including taxiways and aprons.

At Kunsan AB, RED HORSE was tasked to simultaneously design, order material, and construct facilities for beddown of the F-16 aircraft. Replacement of the F-4s at Kunsan with F-16s is a readiness initiative that considerably enhances our mission capability in Korea. Without the rapid response capability of the RED HORSE squadron, we would not be able to meet the accelerated beddown dates of the F-16 at Kunsan. Another readiness initiative is to place an A-10 squadron at Suwon AB, Korea. Although the major construction program is being accomplished by the Republic of Korea air force, certain facilities could not be accommodated by them in their program. Therefore, RED HORSE is being tasked to construct the base exchange and theater. Suwon AB is essentially a bare base for our USAF forces. There are no USAF recreational facilities, therefore, it is essential that we construct the theater and BX to provide some amenities for our people who will be stationed there.

In every theater, there are short notice changes in weapon systems or their accessory components that require facility changes. Our theater is no exception and RED HORSE has proved their ability to simultaneously design, order materials, and construct facilities to meet the readiness challege of the command. A good example of this is PAVE TACK, a new air-to-ground missile system which is being introduced in the Korean theater. It will greatly enhance our readiness posture. RED HORSE will build the 6,000-square-foot maintenance and storage facility.

Readiness, of course, does not just include construction, but also involves contingency exercises to prepare for possible conflicts. The largest exercise for Korea is Team Spirit. In the past, civil engineering support to Team Spirit has always been fragmented. Additionally, the exercise has grown each year RED HORSE has been involved in each

A new roof in progress.

exercise. They are now tasked with the overall coordination of engineering support for Team Spirit. This has resulted in a marked improvement in our readiness posture to support these exercises and will greatly enhance our ability to support any real-world contingency.

Our RED HORSE squadron enhances our readiness posture in Korea. The efforts of all of the engineering and services community within PACAF must also be acknowledged. Because everyone works as a team, we are ready to meet the contingency requirements in the Pacific. E&S

Left: Constructing a PEB at Kunsan AB, Korea.

Capt Donald J. Webb *is the command Red Horse programmer at headquarters Pacific Air Forces, Hickam AFB, Hawaii. He earned his bachelor's degree in civil engineering from the University of Missouri at Columbia, Missouri and his master's degree in facilities management from the Air Force Institute of Technology, at Wright Patterson AFB, Ohio. He is an engineer-in-training in Missouri and a member of the Society of American Military Engineers.*

Below: Pavement for Osan AB Combat Quick Turn.

On the AFRES menu

PRIME RIBS

By Col James P. Penn

Prime RIBS (readiness in base services) had its beginnings about two years ago. Air Force Reserve (AFRES) simultaneously moved out to train food service personnel to rapidly deploy and operate dining facilities in support of operational needs.

The Air Force quickly supplied reserve personnel with operational training opportunities which contribute to learning wartime skills supportive worldwide. Joint Chiefs of Staff (JCS) and major command (MAJCOM) exercises.

Early in 1979, MSgt Larry Kalivoda, AFRES Prime RIBS manager, recognized the opportunity provided by these exercises to take reserve cooks out of their home base environment and train them in the contingency arena.

Although the AFRES RIBS team structure was in its infancy at the time, Col. Matt Cafiso, DCS/Engineering and Services, authorized the immediate deployment for training of reservists in support of 20 exercises. By year end, more than 100 reserve 622X0 members had participated, providing the active force with 2,078 mandays of support.

In FY 1980, reserve involvement was even more extensive. During TAC exercise **Empire Glacier,** 60 reserve and active duty cooks, operated four dining halls, one on a 24-hour basis, and serving approximately 7,000 meals in five weeks gaining firsthand experience in the duties, problems, and requirements encountered by reserve cooks participating with the active forces during simulated wartime conditions. In addition to **Empire Glacier,** a total of 133 reservists provided 2,828 mandays to exercises such as **Bold Eagle, Gallant Eagle, Team Spirit,** and **Positive Leap.**

Additionally, services personnel deployed with local Prime BEEF teams, and in support of AFRES exercises. During the AFRES total mobilization and deployment exercise, **Paid Redoubt '80,** 42 Prime RIBS personnel opened, operated (for three weeks), and closed the dining facility at Volk Field, Wisc., an Air National Guard training site, feeding more than 2,000 during the five peak days of the exercise.

In FY 1981 RIBS teams are scheduled to deploy to 11 locations in Europe in addition to participation in all regular MAJCOM exercises. To get the required training on field equipment 10 to 12 RIBS people attend the Prime RIBS school at the Eglin AFB site while the BEEF team is going through their rapid runway repair training.

AFRES is authorized less than 600 services specialists. These are organized into 41 teams, with the majority (29), postured as RIBS "C" teams---small (nine-man) food service and billeting support teams. The small team strategy fits teams into the existing AFRES organizational structure with a minimum of personnel turbulence. AFRES also has three 39-man "A" teams and nine 22-man "B" teams, located primarily at AFRES bases where concentration of 622X0 authorizations is the greatest.

Air Force Reserve Prime RIBS personnel are training by doing and deploying in support of real world operational needs, as individuals, groups, and organized teams augmenting active units or providing services support where none presently exists.

Since Prime RIBS has become the featured entree on the Air Force Reserve menu, morale, performance, and retention have improved among AFRES services personnel.

E&S

Col James P. Penn *is director of services and reserve resources DCS/Engineering and Services, HQ AFRES, Robins AFB, Ga. He earned his bachelor's degree in aeronautical engineering from the University of Minnesota and his master's degree in urban planning from Mankato State University in Minnesota.*

War readiness: You can be prepared! I ask you sir, is your combat readiness status rating higher than your shoe size? Do you have a higher incidence of missed Prime BEEF training than you care to have? Then, stage your own war at home for just pennies a day and improve your combat readiness rating.

Sound like a sales pitch for a new underarm deodorant? Maybe so, but you can change your combat readiness rating on a tight budget with very little war readiness training experience. All you do is enlist the aid of local resources, add a little imagination, a whole bunch of elbow grease, mix well and watch it grow.

The war at home concept came to life due to the need for a method in which personnel of the 3345 Civil Engineering Squadron, Chanute AFB, Illinois, could be brought together once a year to satisfy all Prime BEEF training requirements in a quick and orderly fashion. Under the guidelines of AFR 93-3, our Prime BEEF training program lacked regularity and meaning. A large amount of time was being lost each time an individual attended required training sessions at sporadic times throughout the year. The no-show rate for required training was on the upswing and the attitude towards readiness training was plummeting downward. In general, the program just wasn't as consistent or dynamic as it should be. Faced with this situation, the readiness and logistics officer decided to design a system that would solve these problems, and from this came the war at home concept. This new concept was supposed to solve all problems, but before Chanute could stage its first annual war at home, a lot of questions had to be answered and a lot of plans had to be made. Through a number of phone calls and meetings it was discovered that there existed a large pool of untapped resources close at hand. Formerly an Army soldier, the readiness and logistics officer envisioned an exercise like Army maneuvers. He found that Chanute's own security police squadron had an air base ground defense force with yearly requirements similar to those of the Prime BEEF teams. After contacting the security police training office, he found that they would be interested in the war at home concept. The benefits to be derived from this combination were immeasurable at this point. The SPs could help us by sharing their experiences, and we could help them by offering a more realistic training setting.

Security police and encampment commander discuss camp layout.

The readiness and logistics officer realized that we were in desperate need of valuable equipment such as PRC 77 radios, field phones, M-60 machine guns, jeeps, 2-1/2-ton troop carriers and so on. This equipment was something that the squadron would never be allowed to purchase and, for awhile, it looked as though the equipment couldn't be borrowed either. However, after contacting the 2nd Battalion, 130th Infantry of Urbana, Illinois, it was found that the executive officer and his staff were interested in the war at home concept and would lend us any equipment

Staging your own war at home...

for just pennies a day.

By Lt Gary L. Vawter

they could.

The security police and Army National Guard were both interested in the new concept and willing to help. We didn't need anything else. However, after a few more meetings with the Army personnel, they volunteered their free time and expertise to help plan and stage the exercise. All major problems had truly been solved now, and the only thing remaining was to plan and institute the new concept in detail.

Over the next couple of weeks, much work was done in preparation for the up-and-coming exercise. However, the readiness and logistics officer departed PCS, and I was given a first-hand look at the war at home concept. I was given another man's dreams and told to make sure they were kept alive. To me, it was a unique concept, but I wasn't sure how it would turn out.

My first impressions of this concept were laced with skepticism. It was a good idea according to design, because all of the yearly required training could be completed in an orderly manner in one week.

Also, with two encampments everyone would get trained. If a person couldn't make one of the encampments, they could attend the other with the proper permission. I really expected to see attendance problems like a decade-record-surpassing increase in mysterious injuries and illnesses or a large number of inspector general complaints from people that were 180.025 days from PCS or discharge. However, I was pleasantly surprised when the exercise was in the final planning stages.

In the final planning stage, the rule was established that if you could not participate in the exercise, you still had to participate in the training by watching. This was a big factor in dampening the grandstanding efforts of the sick-lame-and-lazy corps. Another important factor, though, was that the key Prime BEEF team members had been advised of what would be expected of them and their teams during the exercise. Because of these two requirements, the general attitude toward war readiness training was making a turn for the better. The people were interested in this type of training, and they showed it by pulling together and diligently preparing for the up-and-coming encampment.

War began at 1200 on a Tuesday. Our Prime BEEF CF-1, CF-2B, CF-3 and makeshift CF-5 teams were recalled. At their assigned staging areas teams were briefed on what to expect for the next three days. Each person stood inspection, had his paperwork checked for currency and accuracy and was told exactly what he would need during the encampment. Then, everyone was dismissed to return to work and told to return the following morning at 0600 to prepare for out-processing.

Prime Beef team member shooting from the prone position.

The next morning they were loaded into buses and 2½-ton trucks and transported to the out-processing area. At these areas, they received mobility bags, gas masks, firearms, and out processing for the deployment. The encampment commander received his first deployment package and made plans for convoy tactics. The teams were assembled, the encampment officials were introduced and final briefings on the methodologies of the encampment were given. The vehicles were loaded with personnel and supplies, and we were on our way to war.

The first action the combined Prime BEEF and ground defense teams were to experience was staged on a base perimeter road that was a required part of the convoy route. An aggressor force comprised of readiness and logistics personnel, off-duty security police and base disaster preparedness personnel stopped the convoy with a barrage of tear gas, smoke bombs and M-60 machine gun fire. Convoying personnel disembarked and returned the aggressor fire for a brief time. Then, the fighting was stopped, the event was critiqued and the convoy was back on the road again.

As soon as the convoy arrived at the encampment area, all personnel disembarked and held their position while the ground defense personnel went through search and clear procedures. While the ground defense team carefully swept the area for hidden trip wires, inert claymore mines, and other traps that had been set by Army personnel, the encampment commander studied his map to decide where to place his camp. After the search and clear exercise was discontinued, and camp placement was allowed to begin.

The encampment commander was given the remainder of the day for camp erecting and training in accordance with our rules for acting. The combined teams erected tents, all needed facilities (restrooms, shower, etc), all needed utilities (field phones, generators, lights, etc) and perimeter defenses.

During the first night, an aggressor offensive was not planned. The major offensive was to be staged on the following night after a full day of training had been received. However, to stress the seriousness of this exercise, two aggressors did go out the first night, fire a number of rounds and later capture the entry control point guard. The capturing of this guard proved to be a valuable lesson during the first encampment. Up to this point, security measures had been lax because people weren't exactly sure what they were required to do, but from this point on, regimentation and awareness were the orders of the day.

The second day was similar to the first in that a large portion of the day was spent on training. The morning started with a 0630 wakeup and an early breakfast. Then, training was given in first aid, field fortifications, cover and concealment, perimeter

Security Police instructor teaching low crawl techniques.

Prime Beef teams receiving weapons and ammunition.

Lt Gary L. Vawter *is the readiness and logistics officer, 3345 Civil Engineering Squadron, Chanute Air Force Base, Illinois. He holds a bachelor of science degree in building construction architecture from Texas A&M University.*

defense movements, night discipline and a host of other things. Army personnel introduced us to the .50 caliber machine gun, the TOW antitank missile system and the 81 millimeter mortar. At the end of the day a large amount of training had been received and outward signs of fatigue were starting to surface.

By nightfall, everything required by AFR 93-3 had been completed. In fact, we had gone beyond those requirements, and the up-and-coming night assault was just an extra requirement that we had placed upon ourselves. As darkness came, I watched from a nearby hill as people hurriedly prepared for the battle.

At approximately 2000 hours, with the camp as quiet as a graveyard, the aggressor force had finished its pre-attack briefing and began slowly moving out one by one. Before long, all 15 aggressors had disappeared into the darkness of the camp area. It remained quiet for the next 30 minutes, and then all hell broke loose.

The fighting started with a barrage of smoke and tear gas; a smoke bomb from one direction, a tear gas canister from the other. A large white cloud loomed over the camp. Small bursts of gunfire were heavy; then larger bursts. It was cold and the people were tired, but when the fighting started, they were ready. The fighting continued until approximately 0100 the following morning.

Around 0030 on Friday morning, I received a radio call from the encampment commander asking that the war be stopped within the next hour. At approximately 0100, I got into a truck, turned on the lights and drove through the encampment area announcing the end of the fighting. The next 15 minutes were used to take a prisoner count for both sides and to make sure everyone knew the fighting was over. People were laughing and telling war stories about the 300 enemies they fanned down with five shots.

The third day was similar to the first two days with an early wakeup and breakfast; however, on this day something very special happened — something that was so special that I was compelled to write this article.

Around 1200 hours, all the trucks had been loaded, the area had been cleared of debris, and it was time to go home. Everyone had been busily working to dismantle the camp in hopes of leaving before it started to rain, but the rain had already started to fall. I was busy taking care of last minute details when my attention was drawn to an amazing sight. About 10 yards away the entire group had gathered in a circle, and, in the middle, was a security police sergeant teaching hand-to-hand combat techniques. This sergeant earned a great deal of respect over the previous two days by giving a number of valuable lectures to the group. Now, he was standing in the rain, and everyone was standing with him, giving their undivided attention. I could not believe what I was seeing. I was so mesmerized by what I saw that I had to stop what I was doing and watch.

Ever since the day that I got my first real look at the war at home concept, I had slowly begun to believe in it because of its many merits. But it was not until that day at that specific instance that I became completely sold on the idea.

Since the termination of both three-day encampments, I have found other reasons to be sold on the war at home concept:

- Rapport with other base agencies improved.
- We met a fantastic group of Army people.
- We received training that we more than likely would never have been able to receive.

The attitude toward war readiness and the Prime BEEF training program changed — our people are more willing to attend required training and because of this new attitude, our combat readiness rating has been much higher.

War Readiness: You can be prepared!!! Stage your own war at home for just pennies a day! If it sounds like a sales pitch, then maybe it won't work for you. But, if it sounds like a viable program, then maybe it's just what you need. If you are interested, use the preceding formula, add a little imagination, a whole lot of elbow grease, mix well and watch it grow. E&S

50TH MIDNIGHT EXPRESS

by Lt Roger G. Schuld

Why all the spit and polish for inspections? records being checked? Why were training classes going on? And why were mock deployments being conducted regularly when there seemed to be nowhere to go?

Suddenly, the answers to these questions became quite clear to the 47 members of the Prime BEEF "C" team of the 50th Civil Engineering Squadron from Hahn AB, Germany. After weeks of preparation, the team was winging its way to Merzifon, Turkey, approximately 50 miles south of the Black Sea, with a mission and a challenge. The team was to work with our Turkish allies in a joint effort to make Operation CORONET RIDER/DISPLAY a success. The mission was to erect a tent city and all elements of support for personnel of the 140th Tactical Fighter Wing, an Air National Guard unit from Buckley Field, Colorado, and its 18 A-7D aircraft, for an ex-

Lt Roger G. Schuld *is a Readiness and Logistics officer, 50th Civil Engineering Squadron, Hahn AB, Germany. He holds a bachelor of science degree in civil engineering from the Air Force Academy, Colorado.*

ended training deployment. The challenge was to provide support to an encampment for more than 400 people.

Upon touchdown of the C-130 aircraft carrying the team, Turkish officials greeted members and escorted them to the cantonment area. The area contained a small building, a drainage ditch, a few trees, and lots of open farm fields. In the days to follow, the area would transform into a buzzing tent city.

The next morning, C-130s started rolling in with the equipment. The first major problem to confront the team was to find the most suitable location for the tent city. Turkish officials had originally selected an area in soft, well-tilled soil, but rain would make the area a potential quagmire. After some discussion, the decision was made to locate on the highest ground. Shortly thereafter, we went to work.

Power production people were ready to set up lightalls and generators. Reefer people were ready to turn on the walk-in coolers and ice machines. Electricians were ready to string lights. Carpenters were ready to build. Nobody was ready to raise the 67 tents. As the days went on, however, we all became accomplished tent erectors. At first it took 30 minutes to raise a tent - later we cut it to 10 minutes. Occupational specialities soon became unimportant, as everyone went to work where needed.

As the tents continued to go up, team members began to slip away to work in their own career fields. From the beginning, carpenters were tasked as much as anybody. Their work included building three latrines, two 20-foot bridges to span a drainage ditch, and five shaving/wash stands with mirrors. Next, they built tables, shelves, or whatever they could put together from the meager scraps of surplus wood. Wooden floors had to be put in all the living area tents, so the carpenters built a few jigs to mass-produce tent pallets of various sizes. Liquid fuels people, metal workers, sanitation people, and anyone who could handle a hammer quickly acquired carpentry skills. The operation became so efficient that the team went through 5,000 linear feet of two-by-fours in less than two hours.

Wood was not the only shortage in the camp. The entire base was short of water and the shortage was felt on several occasions. At first, the water people were making shuttle runs of a half mile with two 400 gallon buffaloes to supply drinking water, which they chlorinated. After the showers were up, we used a fire hydrant from a nearby building to fill the 3000- gallon and two 1,500-gallon water bladders from the Harvest Eagle kits. It became evident that we were draining the water well dangerously low, so we ended up making daily water runs off base with 3,600-gallon water tankers driven from Incirlik.

Where did all the water go? Most of it went to what were known as the hottest showers in Turkey. With help from Camp Darby representatives, plumbers set up and ran two shower tents with Harvest Eagle showers. Four stands with four shower heads each made it possible for the entire camp to shower in less than an hour. Drainage was accomplished by converging the runoff into the main drainage ditch.

Along with washing bodies, washing clothes became important during the deployment. Four washing machines were the workhorses as electricians and plumbers worked continuously to keep them running for the tent city occupants. Gravity and a small pump provided the water pressure necessary to do a load of wash.

Electricians, kept busy servicing the washing machines, strung up tent lights in most of the tents and set up several street lights to light the way at night. Chow hall equipment was priority work also. One MB-18 generator powered the chow hall, six reefer units, two ice machines, and the NCO club. A second generator powered hospital equipment, lighting for 10 tents, and two refrigeration units for the base exchange. A final MB-18 powered all the remaining tents and the communication tent equipment.

Refueling was required twice daily from 55-gallon drums mounted on a pickup truck. The quality of fuel required frequent filter changes and maintenance of the generator. Leaks in the refrigeration lines demanded regular repairs and recharging with freon, which we had enough foresight to bring with us.

Having enough potable water for the ice machine was taken care of by the water people. Besides chlorinating water they were responsible for odor control and spraying for insects. Pavements people constructed a power pad for the A-7D aircraft. Equipment operators assisted the 7002 barrier team in installing barriers for the runway. Cost accounting and material control people kept accurate inventories of the equipment that arrived and departed. Handing out tools and other equipment became an even larger task when the tenant unit arrived.

Once the camp was established, half of the team deployed to Hahn AB while the other half settled into a semi-regular base civil engineering unit routine. Everyone was on 24-hour recall, ready to repair a generator failure, etc., night and day. A regular schedule of work was established and things started to become almost routine.

When it came time to pack, everyone was ready to go. Twenty-five remaining team members proved that what goes up takes less time to take down. In two-and-a-half days, we were back to almost where we were when we arrived. All the floor pallets were ready for shipment, all tents were folded and packed away, all equipment was secured to the pallets and the team got out its spit and polish to look good for the long ride home.

The entire deployment was an overwhelming training success. The Prime BEEF team was confronted with many unique and challenging problems. Working as a close-knit group the team met the challenges and represented USAFE and the Air Force in a proud manner. Nothing can replace hands-on training and one would be hard pressed to find a member of this Prime BEEF team who did not grow in his Air Force career E&S

AFESMET to Tyndall

By Maj Andrew Jackson

The Air Force Engineering and Services Management Engineering Team (AFESMET) last summer moved from Dover AFB, Delaware to Tyndall AFB, Florida. This move places the AFESMET with the Air Force Engineering and Services Center (AFESC).

The AFESMET is one of 11 functional management engineering teams (FMETS) assigned to the Air Force Management Agency (AFMEA) Randolph AFB, Texas. AFMEA reports directly to the Air Force Manpower and Personnel Center with functional policy guidance provided from the Directorate of Manpower and Organization (HQ USAF/MPM). One of AFMEA's primary responsibilities is the development and maintenance of manpower standards.

AFESMETS functional areas are civil engineering, services and commissaries, currently representing approximately 85,000 authorizations.

The AFESMET was the pioneer of the FMET concept, and was established in the fall of 1974 at Dover AFB. Since that time a concerted effort by the manpower and civil engineering communities has resulted in manpower standards which cover approximately 80 percent of the authorizations allocated to the engineering and services functions.

NEW EDITOR NAMED FOR AFESC QUARTERLY

New editor of the **Air Force Engineering and Services Quarterly** is H. Perry Sullivan Jr., who comes to the publication from the public affairs office at Air Force Logistics Command (AFLC) headquarters, Wright-Patterson AFB, Ohio.

The announcement was made by Maj. Gen. William D. Gilbert, Air Force director of Engineering and Services in Washington.

Sullivan holds the bachelor's and master's degrees in journalism and public relations from the University of Georgia. He began working in military public affairs with the US Navy, and has subsequently worked with the Army at Fort Gordon, Ga., and at AFLC's Warner Robins Air Logistics Center, at Robins AFB, Ga. He has also worked in newspapers, radio and television.

He is married to Dr. Barbara E. Sullivan, chairperson of the modern languages department, Tift College, Forsyth, Ga. They have a son, Sean, age nine.

Sullivan is a life member of the Air Force Association, a member of the Society of American Military Engineers and the Aircraft Owners and Pilot's Association.

worth

The key to the success of this effort has been the open communication and close coordination between manpower and the functional office of primary responsibility (OPR). Does proximity to the center pay off? AFESC's directorate of operations and maintenance spokesmen feel the answer is a resounding affirmative. Proximity means greatly improved communications, a superior responsiveness to need, and enhanced depth of understanding using AFESC's experts as a resource.

Studies which we are working now are:

ENERGY MONITORING AND CONTROL SYSTEMS (EMCS): We are in the final stages of completing a manpower guide for EMCS. This study will validate more than 600 additional authorizations for EMCS, functional area code (FAC) 4467.

DINING HALLS, FAC 4671: We are analyzing the results of a recent survey which was conducted to help evaluate the feasibility of developing a new manpower standard for this function. At this time it is too early to draw any conclusions from the survey results, but we appreciate the support and cooperation of the survey participants.

CIVILIAN CONUS SUSTAINING: We are working to develop a manpower standard for the civilian CONUS sustaining workload. This study is scheduled for completion by mid-summer.

NEW MANPOWER TABLES: We recently revised most of the civil engineering and services standards to implement the "two-grades-per-skill" policy. These new tables have been approved and should be available through your local publications distribution office.

Several feasibility studies are on the "books" that the AFESMET will evaluate for possible revisions to the manpower standards. They include: Readiness and Logistics, FAC 4438; Contract Management, FAC 4422; Liquid Fuels Systems Maintenance, FAC 4462; and Furnishings Management, FAC 4651. Additionally, we are preparing a survey to take a look at the various methods of transportation used in the civil engineering community with a view toward methods and system improvements.

If you need to talk to a manpower "friend" concerning our efforts in any of your areas, or on other manpower issues, give us a call at AUTOVON 970 plus extension. Principle points of contact (POC) are:

POC	AREA OF RESPONSIBILITY	EXT
Maj Andrew Jackson	Commander	4751
Capt Paul Murr	Chief, CE Management Branch	2076
2Lt Mike Granger	Chief, Operations and Maintenance Branch	2076
SMSgt Lee Robinson	Chief, Wartime Requirements Branch	2973
MSgt Arthur Schatteles	Chief, Services Branch	2973

ONE OF 12 BEST IN AF

MSgt John L. Tremain of the Air Force Engineering and Services Center was named as one of the 12 "Outstanding Airmen of the Year." The Air Force wide award is given to 12 enlisted personnel that best exhibit leadership qualities, problem solving and shown overall self improvement.

All major commands and operating agencies were allowed to nominate their top enlisted people. Sergeant Tremain became one of the 78 nominees after being selected as the outstanding senior NCO at the center.

Sergeant Tremain is assigned to the research and development testing center as NCOIC for engineering materials testing.

ABOVE: Mr. Sapiro today.

LEFT: Mr. Sapiro in 1947.

BEFORE AND AFTER

Norman Sapiro, who just completed more than 40 years of US government service, is shown "before" and "after" in these photos. (The photo on the left is "before," taken in 1947.)

Lt. Gen. William H. Ginn Jr., commander of US Forces Japan and the 5th Air Force, presented him with his service pin at Yokota AB, where Sapiro is deputy civil engineer for the 475th Air Base Wing. Over the years, he has been responsible for more than $2 billion in construction, maintenance and operational budgets.

Before World War II he worked in Hawaii to develop US defense capabilities including radar, harbors, fortifications airfields and hospitals. After Pearl Harbor was attacked, he worked in the recovery operations and the buildup of US forces throughout the Pacific. At the end of the war, he went to Tachikawa AB where he served for 23 years as deputy base CE.

Base public affairs officer, Maj. Shirley Polomsky, quotes Sapiro's philosophy:

> Engineers must do more than build and maintain — they must insure that what is built satisfied the needs of people and they must assure that these people take care of the property the taxpayers provide. The satisfaction of being an engineer is to watch the figment of your imagination take place in solid concrete, wood and steel and then see people derive the pleasure of using the facilities for their planned purposes.

Sapiro obviously takes satisfaction in the Kanto Plain Consolidation Plan, a $277 million replacement construction program which he helped to conceive and to present to Washington for approval.

noting

ENGINEERS NEEDED IN OVERSEAS AREAS

The Air Force needs engineer applicants for civilian overseas employment. Special pay rates for engineers in overseas areas were approved effective March 22.

Any current employee with career or career-conditional status who qualifies for any of the following positions may contact the central civilian personnel office to register in the DOD overseas employment program (OEP).

The positions needed are: architect, GS-11 Alaska, Japan and Okinawa; civil engineer, GS-11 Alaska, Germany, Okinawa and Spain; electrical engineer, GS-11 Germany and Okinawa; electronic engineer, GS-11 Germany and Hawaii; environmental engineer, GS-11 Japan and the Philippines; general engineer, GS-11 Germany, Italy, Japan, Korea and Spain; mechanical engineer, GS-11 Japan, Italy, Okinawa and the Philippines. Additional information may be obtained from the overseas monitor at each DOD central civilian personnel office.

AIR FORCE REQUESTS $1.8 BILLION

The Air Force has asked Congress for more than $1.8 billion for military construction programs.

Highlights of the request are:

— More than $106 million for family housing.

— More than $107 million for Air National Guard and Reserve construction.

— More than $9 million for the Space Transportation System in California.

— More than $365 million for M-X projects in Nevada, Utah and California.

— More than $69 million for upgrading and constructing ground-launched cruise missile facilities at RAFs Greenham Common and Molesworth, England.

— More than $40 million for the minimally attended radar system in Alaska.

— More than $31 million for new construction and improvements of operational and logistical facilities in Pacific Air Forces.

— More than $76 million for facility support of mission and/or weapons-system change in stateside locations.

— More than $64 million for upgrading unaccompanied personnel housing facilities.

— More than $106 million for medical construction

CONGRATULATIONS:

Thirty-four civil engineering officers and five services officers were selected for promotion to lieutenant colonel in March.

(ENGINEERING)

Adams, Gerald R.
Adams, Harold Q., Jr.
Alexander, Roland T.
Barrett, Donald R.
Cirillo, Francis A., Jr.
Clark, James I.
Cocheo, Dennis
Congleton, Duane E.
Dant, Robert E.
*Fisher, Wayne T.
Frederick, James E.
Gibson, James W.
Girard, Roger J.
Goodman, James W.
Gray, Walter L.
Hokanson, Lawrence D.
Jacoby, George A.
Lee, Gerald A.
Loncki, Joseph
Menzies, Stephen P.
Morris, Robert D.
Mosbruger, Charles D.
Paterson, Daniel E.
Posjena, Guenter S.
Rodgers, Willie E.
Scott, James K.
Sheppe, Robert M.
Smith, Daniel M.
Snider, Jerry C.
Steinmann, James W., Jr.
*Stowell, Philip G.
Thomas, Donald J., Sr.
Thompson, James D.
Webbenhurst, Robert C.

(SERVICES)

Miller, Gordon O. II
Neff, Arthur D.
*Scott, James H.
Swaney, Robert W.
Travis, Byron P.

*Designates senior service school selectees.

MAJOR SELECTEES NAMED

(ENGINEERING)

* David E. Amthauer
James H. Andrews
Richard A. Bauman
John A. Blair
Thomas E. Bretz Jr.
Sidney V. Bridges
Michael H. Cochran
* Kenneth A. Cornelius
* Robert R. Costigan
Paul R. Dolter
* Derek B. Donley
John H. Fraser Jr.
John M. Giarnese
Douglas J. Greening
George G. Hamill
Richard L. Hansen
John F. Harvey III
David V. Henrichsen
Charles R. Irons II
Arthur H. Jenks
Robert M. Julsonnet
George M. Junkin, Jr.
Clayton M. Kline
Richard J. Kochanek
Jerry W. Kranzler
John D. Kuespert
* Richard W. Laske
Robert B. Lyon III
James R. Marshall
* George W. Mayes
Floyd P. McClellen
James F. McEvoy
Robert H. Nall
* Marshall D. Odom
* Robert W. Osburn
Leo F. Rachal Jr.
Thomas J. Rayl
Robert J. Schultz
Stanley H. Scofield
* Oleh Skrypczuk
Kent G. Smith
Wayne H. Snowbarger
Thomas E. Urich
Richard L. Williams
Gary R. Worrall
* Frank J. Destadio
* Samuel E. Garcia

(SERVICES)

* Sally F. Gabrielson
* Glenn Gaslin
Harold H. Holden III
Jungus F. Jordan
James A. Mitchell
Robert A. Ruhnke
Michael A. Spain
Lisa M. Tillotson
Harry L. Tuesdale
Danny J. Wilkerson
Kim M. Wintner
* Hedy C. Pinkerson

* Intermediate Service School Nominee

HENNESSY WINNERS NAMED

Yes! There are some five-star places to eat in the Air Force.

AFESC's galloping tourmets travelled throughout the world to determine the winners of this year's silver anniversary of the Hennessy Trophy, symbolizing the finest in food service in the Air Force.

Best single unit honor went to the Air Force Academy airmen dining hall, with England AFB, La. (TAC) as runner-up.

Best food facilities on bases with multiple dining halls went to Eglin AFB, Fla. (AFESC) with Templehoff Central Airport, Germany (USAFE) as the runner-up.

A special award went to the 934th Tactical Airlift Group, Minneapolis-St. Paul International Airport, Minn. (AFRES).

Judging was by special AFESC teams which visited nominees, critically inspecting attractiveness of service, imagination and quality of menus, efficiency, cleanliness of operation, and overall operational excellence. Each team included AFESC food service experts and top-rated civilian restaurant people.

Lt Gen Richard E. Merkling, vice commander of the Air Force Logistics command, was scheduled to present the trophies in Chicago at the annual meeting of the American Restaurant Association.

Other nominees were: (Multiple Category) — Robins AFB, Ga. (AFLC); Lowry AFB, Colo. (ATC); McChord AFB, Wash. (MAC); Yokota AB, Japan (PACAF), and Nellis AFB, Nev. (TAC); (Single Category) — Galena Airport, Alaska (AAC); Vance AFB, Okla. (ATC); 6940 ESW Ft Meade, MD. (ESC); Whiteman AFB, Mo. (SAC), and Yamanlar Installation, Turkey (USAFE).

CEMIRT SAVES MONEY

Real property installed equipment (RPIE) declared excess when an Air Force installation closes is now managed and controlled by the Civil Engineering Maintenance Inspection Repair and Training (CEMIRT) organization. CEMIRT removes the equipment and stores it at five CEMIRT regions.

The equipment — diesel generators, transformers, and large air conditioning units — is provided covered storage. Prior to the involvement of CEMIRT, the equipment was placed in open storage and generally deteriorated to a scrap condition. This procedure defeated the purpose of the program, to reutilize RPIE in new projects and obtain a large savings of funds. The new procedure also expedites project completion through the immediate availability of large utility systems which would normally have a two to three-year pipeline time.

Some of the equipment is quite large. The diesel engines alone often weigh 110 tons and drive alternators which generate three million watts of electricity. The flywheels on these generator sets weigh upwards of 17 tons. As a comparison the flywheel on your automobile weighs 10-35 pounds.

Should you incur a need for a large 250 to 3,000 kilowatt generator set, a transformer or air conditioning unit, contact either Lee Browning or Mrs. Jeanne Vincent at AUTOVON 970-6366 before you buy a new one. E&S

CESMETips

The Air Force Civil Engineering and Services Management Evaluation Team (CESMET) reviews, evaluates and assists Base Civil Engineering and Services functional areas in accomplishing their mission in the most effective and efficient manner. This department is designed to pass along new ways to do the job better.

FIRE PROTECTION

Our fire fighters spend a large portion of their lives in the station. Everyone can benefit from a facility that is well decorated and comfortable. One of the areas where progress in improving our working environment is most obvious is the bunk room. We have seen some outstanding examples of modern, comfortable bunk rooms. Partitions (four or five feet tall), color coordinated drapes, bedspreads, carpet, bedside tables, reading lamps, chairs and modern lockers will create a pleasant bunk room. A well thought-out, coordinated plan will incorporate all the ideas and permit proper time phasing. Several of the better bunk rooms we have seen have been redecorated using Bachelor Facility Improvement Program funds. Improved fire fighters' morale is worth the effort and expense.

CIVIL ENGINEERING

Do you know how many jobs are completed each day by the DO-IT-NOW (DIN) operation? Many operations chiefs are not monitoring DIN utilization. At Luke AFB the operations chief is briefed each morning of the previous day's completed work. Anything over eight jobs per day per vehicle can be considered good. Keeping the spotlight on this area will keep the utilization up. Have you checked lately on how your controllers are accounting for recurring maintenance man-hours? We are finding that estimated time is reported rather than actual time spent on recurring maintenance. This often distorts the man-hour accounting system and does not give you accurate data to evaluate the recurring maintenance program.

SERVICES

Is the linen exchange monitoring unit exchange rates? Are units making bulk exhanges? If not, the exchange rate is probably low. When linens are not changed frequently they may become excessively soiled and must be replaced long before they wear out. Have the linen exchange supervisor monitor exchange rates for each unit. Notify commanders each month of their exchange rate and ask for assistance if exchange rates are low. It's a good idea to also include these figures in the Base Commander's update briefing. Contact the first sergeants and dormitory managers and encourage them to establish procedures for bulk exhanges. Improved exchange rates should result.

BUDGET

At McConnell AFB, we saw a different approach for outlining the organization's financial strategy for the year. The funds manager prepared a funding strategy paper which outlined funding constraints and offered recommendations. The BCE either agreed with the strategy or redirected the emphasis. This is an excellent technique. It "sets the tone" for the organization's financial objectives. For details call Mr. Jones, AUTOVON 962-6798. Just a reminder, AFP 85-11, Civil Engineering Financial Management Guide, is now available through PDO channels.

SUPPLY

The quality assurance evaluator (QAE) largely determines the effectiveness of your contractor operated civil engineering supply store (COCESS) operation. We have not seen outstanding COCESS support at any base where the QAE program was weak. The QAE must ensure the contractor performs as specified in the contract. The best tool for managing the QAE program is the QAE log. All important performance data should be evaluated and the results entered in the log. We suggest evaluating and logging at least one performance item every day. Some performance items you could include are bench stock availability by commodity group, contractor responsiveness to bench out-of-stock conditions, and response to emergency-expedite requirements. Other items include: response to required/estimated delivery dates; item pricing; review of NPI invoices; and, contractor issuing required brand names. Don't use the rating "satisfactory." This implies that everything the contractor did that day met contract specifications. The QAE should also brief BCE management periodically on the COCESS operation.

CONTRACTING

A number of bases have completed cost studies for converting military family housing maintenance from in-house to contract. Several items should be emphasized as lessons learned: (1) take the time to conduct a comprehensive preaward survey with the prospective contractor (in conjunction with base contracting) to review resources and capabilities; (2) get the QAE on board and trained prior to contract start; (3) determine the valid backlog which should be turned over to the contractor and ensure that a reasonable period is allowed to perform the work; and, (4) insist on documentation of contractor performance, workload, and backlog on a monthly basis and brief the status at the commander's update briefing. These actions will help get the contract off to a positive start, minimize surprises and provide visibility.

TRANSPORTATION

Has your vehicle control NCO analyzed the work load and responsiveness of your taxi fleet? Mobility of the work force gets a lot of lip service these days, but is anything being done to improve it? Some factors to consider are craftsmen wait time, who uses the taxis, number of daily taxi trips, who drives the taxis, and is the base zoned to eliminate dead head trips? Periodic analysis will point out good and bad features of the taxi system and will lead to improved work force mobility.

FIREFIGHTER READINESS

by CMSgt Milford E. Puckett

Fire fighter readiness is a vital part of the total Air Force readiness structure in both peacetime activities or wartime contingency operations. Fire fighters must be prepared to respond to any emergency situation for the protection of aircraft and other resources vital to the Air Force mission.

Considerations

We must examine the challenges and special tactics required in planning for a wartime environment. Some of the issues we continually face are:

- Types and amount of equipment and personnel needed;
- Ensuring enough personnel are available in our total force (active, reserve, and National Guard forces) to meet our wartime commitment;
- Ensuring personnel are properly trained and prepared for deployment;
- After deployment, adequacy of remaining fire protection for active CONUS bases.

The Scenario

The problems we will face during wartime require special fire fighting tactics and managerial decisions. Certainly, a wartime scenario will introduce challenges which require different approaches to fire fighting than we are accustomed to. Preparing for wartime environment presents challenges to all fire fighters, especially supervisors, to insure that we are trained and ready.

The primary mission of fire protection forces is to support the flying mission. This includes not only aircraft crash rescue operations but also the protection of essential facilities and materials. With this in mind, let's examine some of the readiness challenges facing fire protection.

The aftermath of an enemy attack may leave several fires with large numbers of aircraft, facilities, and vital war materials exposed. Priorities must be established as to what requires protection first.

There will not be enough personnel, equipment, agents, or time to extinguish all fires; some may have to be controlled and allowed to burn themselves out. Fire suppression operations may be hampered by chemical or biological agents. Operating under these conditions will be slow, dangerous, and fatiguing even with the use of first-rate protective clothing.

The increased involvement of explosives will require assessing the risk of losing a fire fighting vehicle and crew versus the need to suppress a particular fire. Aircraft crash rescue operations will be more numerous and complex due to battle damage and crew injury. Quick removal of damaged aircraft from the runway will take on increased importance.

Before an attack occurs, airfield activity such as aircraft launch and recovery, taxiing, off-loading cargo, uploading munitions, oxygen servicing, and maintenance activities, will increase as levels of readiness increase.

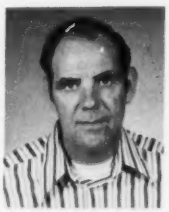
Congestion of parking aprons and hangars will occur. As safety precautions are sacrificed for faster aircraft turnaround time, increased standby requirements and the need to reduce response times becomes greater.

Planning Assumptions

Plans to meet these challenges are underway. A comprehensive method to determine equipment and manpower requirements has been developed. Criteria include type of aircraft, base mission, number of sorties per day, number of squadrons involved, and the number of aircraft expected to be on the ground at one time.

Some factors exist to assist in planning. One-hundred percent manning will be initiated with no crossmanning. Due to increased activity and fatigue, the regular workload will be based on a more realistic work week. A position manning factor of 3.018 will be used to determine authorizations per vehicle position.

Challenges facing the fire fighter can be dealt with by continuous planning, realistic training, development innovative tactics to cope with demands, based on the expected contingency mission. E&S



CMSgt Milford E. Puckett *retired from the Air Force on November 1, 1980, after 26 years service in fire protection. During his career, he served in all duty positions within the fire protection field including Fire Chief at Zweibrucken AB, Germany from 1974 to 1977. From July 1977 until his retirement, he was superintendent of the Aircraft Crash Rescue Field Assistance and Evaluation Team, Tyndall AFB, Florida.*

HONORS GIVEN AT ENGINEERS LUNCHEON

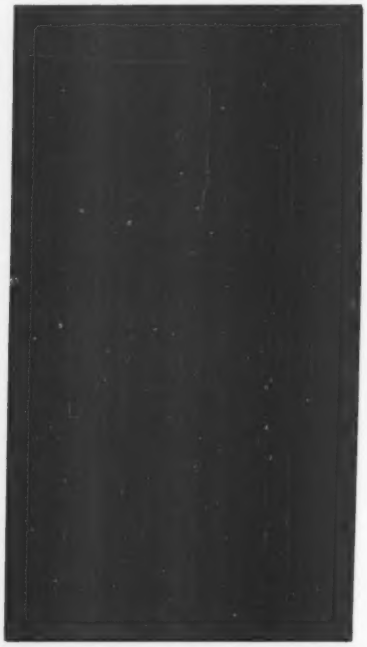
Gen Gilbert presenting

By Capt. Hedy Pinkerton

Thirteen individuals and four Air Force installations were recognized for superior accomplishments during 1980 at the nineteenth annual Air Force engineering and services awards luncheon, Feb. 26 at Bolling AFB, D.C.

More than 250 persons, including distinguished representatives from each branch of the military services and several notable retirees, observed the presentation of awards to engineering and services personnel. Winners were cited for significant accomplishments in their particular fields of expertise. The event was hosted by Maj Gen William D. Gilbert, US Air Force director of Engineering and Services.

Air Force engineering personnel who were recognized



Above: SRA James Sanders

Left: SMSgt Campbell

Newman medal to Col. Ellis

include:

Capt Daryl B. Seckman, 1606 Civil Engineering Squadron (CES), Kirtland AFB, N.M., military meritorious achievement award;

Billy D. Rich, 96 CES, Dyess AFB, Tex, civilian meritorious achievement award;

Herbert C. Bohannon, 1606 CES, Kirtland AFB, civilian manager of the year with a grade above GS-11;

David M. Shira, 2852 CES, McClellan AFB, Calif., civilian manager of the year with a grade up to GS-11;

CMSgt Beverly D. Sorrell, 2852 CES, McClellan AFB, NCO of the year with a rank of MSgt to CMSgt;

SSgt Charles J. Carroll, 314 CES, Little Rock AFB, Ark., NCO of the year with a rank of Sgt to TSgt.

Three awards sponsored by the Society of American Military Engineers were presented honoring members of Air Force civil engineering for significant achievements.

Col George E. Ellis, DCS/Engineering and Services, headquarters Tactical Air Command, Langley AFB, Va., received the Newman medal, honoring him for his contributions to military engineering through achievement in design, construction, administration, or research and development.

SMSgt Arthur J. Hanrahan, 7002 CEF, Ramstein AB, Germany received the Goddard medal, for outstanding contribution to military troop construction and/or base maintenance.

The 56 CES, MacDill AFB,Fla., was awarded the Curtin Plaque, for outstanding achievement in mission accomplishment, managerial improvements, and economic use of resources.

The Aerospace Education Foundation of the Air Force Association annually presents the Maj Gen A.M. Minton Award to the best author of an article published in the **Air Force Engineering and Services Quarterly** during the last calendar year. The 1980 winner is:

Mr. H.R. Marien, HQ AFESC/RDC, Tyndall AFB, Fla. He was recognized for his article in the February 1980 issue, "To Save a Million Dollars".

The following awards were presented to services personnel:

Maj William J. Murphy, AFCOMS, Kelly AFB, Tex., senior services manager of the year.

First Lt Mary H. Wood, 410 CSG, K.I. Sawyer AFB, Mich., services manager of the year.

MSgt Tommy L. Campbell, TFW, Langley AFB, services superintendent of the year.

TSgt Aleb T. Regyi, 7002 CEF, Ramstein AB, Germany, services technician of the year.

The following installations were recipients of the annual William H. Bordner Awards, which honor the outstanding prime electrical and heating plants in the Air Force.

Air Force Academy, Colo., Category II, heating plant with an installed capacity over 14 million BTU/hr. Col Ralph Hodge, HQ USAFA/DE accepted the award.

Det 1, 1989 COMM GP, Spain, Category II, prime electrical generating plant with an installed capacity from 100 to 2,000 KW. MSgt William Campos accepted the award.

San Vito AS, Italy, Category II, prime electrical generating plant with an installed capacity of more than 2,000 KW.

E&S

Gen Dorherty (Ret) and Hank Marien

Salty MACE

By Capt Duncan H. (Scott) Showers

The clock on the wall showed 0627 when the sirens broke the fog of the silent morning; men and women moved swiftly to don their gas masks, zip their chemical ensembles and pull on their gloves and boots. Once accomplished, with sirens still sounding, personnel ran for cover until the alarm once again sounded the "all clear." Many hours of intense training insured that the chemical ensemble could be put on very rapidly as seconds may mean the difference between life and death.

How long can you hold your breath? Thirty seconds? One minute? Maybe even two minutes? Recently at Hahn AB, Germany, the entire 50th Tactical Fighter Wing practiced holding their breath just long enough to don their masks and individual chemical warfare (CW) ensembles. For the next two days the entire wing spent more than 12 hours in these protective suits and nine of the 12 hours occurred consecutively. Readiness in a chemically contaminated environment is practiced continually within United States Air Forces in Europe (USAFE); however, our abilities within a CW environment have never before been highlighted as they were during Salty MACE 80 (mission accomplishment in a chemical environment).

In April 1979, a broad area review of the Air Force's chemical warfare programs, both offensive and defensive, was called by the Air Force Systems Command. During this meeting one particular objective became clear - a full scale exercise was needed to quantify and measure degradation of personnel effectiveness while wearing the full CW ensemble and performing typical wartime tasks in a continuously-simulated, chemically-contaminated environment. USAFE accepted this challenge, and Salty MACE was initiated to accomplish this objective. The uniqueness of Salty MACE versus other readiness exercises constantly being held throughout USAFE was that for the first time an entire wing operation would function in full chemical ensembles for one duty day (at least six continuous hours). As mentioned, all personnel remained within the CW ensemble in excess of nine hours. Degradation factors attributed to the CW ensemble were measured, documented, and quantified by members of the HQ USAFE staff who observed the exercise. This information will provide the Air Force with the means to evaluate its CW program and identify specific areas where additional research and development effort is required to provide suitable answers to our present day workarounds.

Upon direction from CINCUSAFE, the major task of exercising an entire wing began. Under the auspices of the USAFE readiness center, the headquarters disaster preparedness staff began planning a scenario that touched all facets of both operational and support functions that operate within a chemical environment during wartime. Salty MACE encompassed all levels of sortie generation and supporting functions including rapid runway repair, chemical decontamination, casualty handling, structural firefighting, munitions assembly, quick turn around of aircraft, hot pit refueling, aircrew extraction, medical treatment, terrorist attacks, aircraft barrier engagements, resupply transfers, even the simulated transfers of high priority assets. From admin clerks to aircrew members, all par-

ticipated in Salty MACE.

Since certain problems with the CW ensembles were already known, such as heat stress, physical movement restrictions, and restricted vision, extensive safety measures were taken. If individuals could not continue functioning within their C-suits,they were encouraged to withdraw themselves. Medical teams were standing by to measure and record body vital signs for future analysis. Wing and headquarters observers were also on hand to eliminate individuals who appeared to be suffering from extreme fatigue and to prevent safety incidents from occuring as a result of the chemical suit limitations.

Although the CW ensemble poses restrictions upon the wearer, personnel readiness and dedication to the mission of the 50th TFW at Hahn AB made the wearing of the CW suit just another mission requirement. Severe communication problems were resolved; hand signals and sign language helped to bridge the gap. Also, identification procedures had been developed for security purposes, and new concepts of operations have since been conceived as a result of Salty MACE.

The professionalism of all participants remained high prior to and during the simulated attack. The waiting was the most unbearable as the uncomfortable chemical gear became more noticeable. Members of the 50th TFW began wearing the full chemical ensemble in the "open" configuration, suit unzipped and mask and hood off from 0415 until red alarm was sounded. Once the airfield attack was over, damage assessment complete, and the presence of a chemical agent confirmed, alarm "black" was established and the 50th civil engineers began their base recovery operations. With sweat dripping down the front of their suits, men and women methodically proceeded with the assembly of AM-2 matting. Oblivious to the F-4 aircraft taxiing by, they concentrated on where they were walking and what they were doing because dexterity and visibility are severely hampered.

Simulated structural fires were suppressed by firefighters dressed in gas masks and clothed in their standard bunker suits. Dual-tasked to actively participate in all chemical exercises, USAFE fire fighters must also be prepared to respond to any real emergency. Presently, the M17 gas mask cannot be used with self-contained breathing apparatus, and the silver bunker suits do not provide chemical protection. Therefore, fire fighting is limited to suppression techniques and rescue operations are forced to wait until suppression tactics are successful. During Salty MACE, the heat stress was severe enough within the bunker suits that fire fighters were eliminated early by USAFE to protect Hahn's response capability to a real emergency.

Capt Duncan H. (Scott) Showers *is a graduate of the University of Idaho, with a bachelor of science in civil engineering. He has nearly three years previous experience with the 819th Civil Engineering Squadron (HR) RED HORSE and currently serves in the European air combat operations staff (EUROPS) in the passive and chemical warfare survivability section for USAFE engineering and services.*

While the fire fighters exercised their skill, others were similarly evaluated. Mortuary affairs personnel practiced movement of casualties and decontamination of remains. Sortie generation, based on wartime levels, continued from dawn to dusk. Munitions loading and downloading and aircraft quick turn-arounds were performed. Evaluations of personnel effectiveness both in and out of the suit were made of all skill areas. Every possible wartime activity, operational and support, was observed, monitored, and evaluated. Personnel were also interviewed to find unique problems directly associated with the current ensemble and the degradation related to wearing it. These results will be incorporated in the final exercise report.

The final results of Salty MACE are still being tabulated but initial results have been favorable. For the first time ever, local national civilians participated in a USAFE chemical exercise on a wide scale. Sixty-one local national civilians volunteered to participate in Salty MACE; they were provided training and given full chemical suits. This is a major step toward fully involving civilians who occupy "mission essential" positions in USAFE readiness actions. Motivation and personal dedication ran extremely high during the entire wing exercise. Even when affected by the physical discomforts of the chemical suits, people often refused to self-eliminate themselves, even to the point of hurting themselves. From the entire wing population, only 42 people eliminated themselves or were removed by USAFE observers.

Salty MACE is only one of many readiness actions that USAFE bases are continuously involved in, but it proved to be important. It has established the basis for increasing the Air Force'e research and development improvements for the chemical suit we operate in today. The lessons learned through Salty MACE have benefited USAFE today and will certainly benefit the Air Force tomorrow. E&S

SAME Convention:

Gen Gilbert Concludes Year of Direction, Progress, Growth

by H. Perry Sullivan Jr., Editor

Maj Gen William D.Gilbert, Air Force Director of Engineering and Services, concluded his term as the sixty-first president of the Society of American Military Engineers (SAME) at the annual national convention April 29-May 2 at Coronado, Calif.

After a year of General Gilbert's leadership, the society is larger, with more than:

*21,500 members in
*16 regions, with
*118 local posts,
*49 student posts, and
*about 750 private industry sustaining members.

Theme for the year was "Military Engineering for the 1980's — Meeting the Challenges." A tribute to his leadership was the decision by Louis W. Riggs, the new president, to continue with General Gilbert's goal-oriented program, but under a new theme of partnership between the civilian and military elements of the society.

At Coronado, there was the sense that the society is also stronger, more unified, and more clearly focused on the great issues facing military engineering in the decade: energy, readiness, the environment, productivity, research and development, major project management, and engineering personnel.

As the convention unfolded, there was the sense that the partnership of military and civilian SAME components could form a new synergy through cooperation. "I believe the readiness interface and communication between industry and the military services is yet an untapped resource of innovation and knowledge," said General Gilbert. The cooperation obviously must span the other issues as well.

Lt Col Eugene A. Lupia (left), Col George E. (Jud) Ellis (right) are congratulated by Maj Gen William D. Gilbert for winning SAME awards.

MAJOR PROJECT MANAGEMENT

He said super projects of the 1980's will be among the most complex military construction projects ever developed by the military with "significant impact upon our national defense, strategic power, and the economy of our nation." He cited the:

*M-X Missile System
*Space Shuttle
*Trident
*Air and Ground Launch Cruise Missile
*Israeli Airfields, and the
*Saudi Program.

"New skills will be required to accomplish and manage this new construction and then to properly complete follow-on facility maintenance and repair," he said.

ENGINEERING PERSONNEL

"Our nation faces a shortage of engineers at the very time that many of the national issues and problems require engineering solutions," he said. Faced with flat or declining engineer graduations, "the military services, without changes in pay and incentives, will be able to attract and retain less and less of the total market of qualified engineers."

By contrast, he said the Soviets continue to "increase their numbers of engineers, who enjoy a significantly higher degree of emphasis, prestige and rank within their military than do the U.S. counterparts," he said. "In 1978, for instance, the Soviet Union graduated 295,000 engineers, while the U.S. figure was 26,000. They are insistent on educating and acquiring large numbers of scientists and engineers for their military."

PRODUCTIVITY

He said the U.S. must "meet the challenge of being productive in all phases of engineering from design and construction to follow-on maintenance and repair. Inflation, new degrees of design sophistication, increased government regulations, and a new vulnerability to the whims of foreign energy-resource suppliers will all affect our productivity."

RESEARCH AND DEVELOPMENT

General Gilbert said that "future weapon systems and facilities will require new and original research into materials, methods and equipment that look beyond existing technology."

ENERGY

Facing increasing energy costs and dwindling petroleum

Louis W. Riggs (left) presents gavel plaque to Maj Gen William D. Gilbert honoring his presidency of SAME.

reserves, General Gilbert said design engineers and architects will be faced with "enormous uncertainties," which will require retesting and revising previous standards while designing to satisfy tomorrow's conditions. First cost considerations will become less critical when compared with operating cost. He said engineers must be flexible and "devote attention to all aspects of conservation and optimization, coal conversion, geothermal and solar energy applications." He also said designers must constantly be aware of "new developments and closely monitor the outpouring of both new and retrofit applications."

READINESS

He said the clear-cut superiority enjoyed by the U.S. in the 1960's is gone, and the "Soviet Union has achieved nuclear parity in strategic forces. In conventional forces, we have been outproduced in numbers while the Soviet Union has also proceeded toward closing the qualitative gap," due in part to "accomplishments of their military engineering and scientific population."

"Soviet procurement, military construction and research and development for the last 10 years has exceeded our own investment by $355 billion in 1982 dollars," he said.

He called for informing the public of U.S. needs, encouraging development of "skills, equipment, and facilities required in wartime."

ENVIRONMENT

"With proper planning and forethought, we can accomplish our missions and be in proper compliance with environmental restrictions," he said. He called for the society to facilitate finding innovative and less expensive solutions to environmental concerns. "I believe that economy of operations and energy conservation can be achieved without reducing the quality of the environment around our military installations."

SUMMARY

"Our image as professional will depend on how well we cope with the challenges of the 1980's," he said. "We have met the demands and challenges of the past, and we can also meet them in the future. We have brought innovations and new technology to meet our previous needs, and we will do so in the future." He concluded, "You are the best hope for translating the theories of scientists and the promises of politicians into those products and services that can truly meet the need and expectations of our people."

GENERAL HUYSER KEYNOTER

"For the first time since World War II, we're going to be dealing from a new plateau — of inferiority," said Gen Robert E. Huyser, Military Airlift Command's retiring commander-in-chief, the keynoter for the convention. Stating that the U.S. no longer has nuclear or conventional warfare superiority, he said real growth in Soviet spending for defense has eclipsed the U.S. zero growth rate.

From his confidence in a "certain" U.S. military victory in World War II, which he entered as an enlisted man, General Huyser traced an evolution through the Korean Conflict to Vietnam. Scoring the "danger of false illusion," General Huyser said that "the illusion is that you can lead others to do good through good. I don't think that is possible."

Throughout the period of U.S.-Soviet confrontation, he noted that the Soviets have backed down before demonstrations of our national will and capability. Yet, underlying Soviet relations, historians note a centuries-long trend of acquisition and conquest, particularly significant in light of Soviet involvement throughout the world today.

Where British Prime Minister Margaret Thatcher calls the 1980s a "period of danger," General Huyser sees the period as one of "challenges," in which "opportunities outweigh the dangers." After the U.S. lost its national resolve following Vietnam, he said, "I feel that we're on the upswing now." However, shortages of minerals, natural resources and energy must be overcome, he said. He called for readiness through increased U.S. mobility, stockpiles of prepositioned materials overseas, and a resolve to accept "no unacceptable compromises" with the Soviets, while renewing American "unity, confidence and love of country."

GENERAL WARNER

The concluding luncheon was addressed by Army Gen Volney F. Warner, Commander-in-Chief of the U.S. Readiness Command, MacDill AFB, Fla., who revealed that the multiservice rapid deployment force development, training and use will remain under Readiness Command, transitioning at some future point in time to a theater command. Outlining a threatening world situation, he cited the need for improved and expanded air and sea transportation, weapon systems and facilities geared to readiness needs, with consideration to the individual needs of personnel.

PANEL HIGHLIGHTS

Military Readiness, a World Capability — Dr. Charles Merdinger, long-time Navy educator and engineer, now a member of AVCO's board of directors, moderated a panel including retired Marine Lt Gen Victor A. Krulac, Air Force Lt Gen Philip C. Gast, and Perry J. Fliakas, Deputy Assistant Secretary of Defense for Installations and Housing.

General Gast, Director of Operations, Joint Staff with the organization of the Joint Chiefs of Staff, depicted a world of crisis management, with some scenarios overshadowed by the capacities of ports and airbases to support U.S. readiness initiatives. "Do the Soviets really believe that we have the ability and conviction to respond," he asked. He called for the capability to mobilize and deploy with believability, fixing mission capabilities we neglected for some 10 years. Only full-dress exercises short of war will test equipment and concepts, he said, calling for realism to simulate the extreme operating environments which play havoc with people and equipment. He also called for early communications between the developers of weapons systems and the facility engineers who must design, build and make operational the supporting facilities.

General Krulak described two ends of the readiness spectrum, the low-level insurgency aspect in poor and developing nations, and the worldwide thermonuclear conflict potential. "Deterrence in war is only accomplished by things that can win a war," he said, "and the only things that can deter war are those which put enemy forces at risk."

Mr. Fliakas said "facilities make readiness." Of the $6.1 billion in the new military construction program, $5.8 billion is for construction, one-third overseas. Most is for facilities — not bases, including sea control, rear staging and operating projects which make use of friendly nation bases to which we have access. The U.S. has a long way to go, he said, due partly to our "own short-sightedness." He cited the European stables and farm buildings which have been converted to maintenance shops, in use from World War II to the present in Europe. Compounding three and a half decades of temporization regarding overseas facilities, he cited past priority confusion. "If it didn't fly or shoot, it didn't get much attention in the Department of Defense," he said.

Young Engineer Workshop — Retired reserve Rear Adm Andrew Braccia of Braccia and Associates moderated a panel dealing with personnel, training and management and their relationship to productivity. Participants were Dr. William J. Haga, Sociomatrix Associates, an adjunct professor at the Navy's Postgraduate School, Monterrey; Maj Gen Stuart H. Sherman, Jr., Commandant of the Air Force Institute of Technology; and Ward Deems of Deems/Lewis and Partners, an architect.

General Sherman noted that professional development and continuing education are essential ingredients in industry and in the military. Like aging plant facilities and equipment, even professional degrees face obsolescence in about 20 years, he said, requiring an investment in renewal. He said that the Air Force profits from good industrial examples of professional development. At AFIT, he said it is now possible to take a progression of professional education courses as the civil engineer matures as an officer, leading not only to career enhancement, but a master's degree which evolves with the changing educational needs of the officer. Surveys show a relationship between money, prestige and position among professional engineers in private practice, he said, and there is also a relationship between professional and military education and advancement in the military.

Dr. Haga called for "avoiding reward inflation" and concentrating on work group rewards for achievement. One incentive system common in the U.S. gives bonuses for profits, leads to short-term solutions which don't enhance productivity or encourage long-term investment and planning. This leads in turn to obsolescense in equipment and plants, and declining national productivity.

Deems outlined his firm's approach to personal involvement, continuing education and on-the-job training, coupled with incentives and quality controls. An interesting feature is the in-house professional seminar, which encourages information sharing through papers and presentations.

Energy Challenges for the 1980s — Brig Gen Charles W. Lamb, Air Force regional civil engineer for M-X at Norton AFB, Calif. moderated a panel which included Navy Capt Salvatore A. Martinelli, Naval Facilities headquarters; Col Douglas L. Haller, Army Corps of Engineers' Norfolk District; and Air Force Col Arthur Kishiyama, DOD liaison at the Department of Energy for M-X renewable energy systems (RES).

Colonel Kishiyama outlined the M-X/RES project, which calls for industry proposals to achieve a goal of relative energy self-sufficiency for the project. He outlined alternatives considered in the request for proposals, which include photovoltaic, solar, geothermal, biomass and wind, coupled with storage and backup. Other options include using conventional electrical utilities, a dedicated M-X coal-fired power plant, or a combination. The challenge is a constant power leading for 4,600 M-X shelters. Each cluster group of 10 23-shelter groups and related technical facilities require 3.5 megawatts, half of this powering shelters. Overall, including two operating bases (one with 27 megawatt requirements and another with about half), the total M-X requirement calls for 110 megawatts average, 130-140 megawatts at peak, with initial operating power on line not later than mid-1986. The joint Air Force, Department of Defense and Department of Energy project

Brig Gen Charles W. Lamb (right) and Col Arthur Kishiyama (left) discuss M-X RES project.

will greatly advance the renewable energy concept, and there have been more than 800 prospective bidders responding to the proposal requests. "M-X/RES promises more for renewable energy than all other development programs in history combined," he said.

Captain Martinelli outlined Navy initiatives to cut energy use through facilities modernization and incorporation of better features in new structures. Colonel Haller cited growing U.S. coal exports as one reason for deepening channels and ports to handle bigger, more efficient ships, and cut backups at U.S. coal-shipping terminals.

Post and Regional Workshop — Brig Gen Gary Alkire, deputy chief of staff at Air Force Logistics Command for Engineering and Services, moderated a panel on organizing, managing and sustaining the society. Participating were Col Joseph Ahearn, president of SAME's Washington, D.C. post, who works for the USAF Directorate of Engineering and Services; retired Air Force Col Robert Schirmer, president of the Tucson, Ariz. post; and retired Navy Capt C. F. Krickenberger, president of the Houston, Texas post.

Colonel Ahearn cited the need for good programs, activities and a sustained interest in the profession as keys to the success of the Washington post. He highlighted the society's involvement with young engineers, ranging from presenting science fair awards to college-level scholarships and interacting with student chapters. Colonel Schirmer outlined the revitalization of the Tucson post; and Captain Krickenberger's post represented the optimization of the potential in an area such as Houston.

AWARDS

Two Air Force officers were honored at the awards banquet, Col George E. (Jud) Ellis, Deputy Chief of Staff of Engineering and Services, Tactical Air Command, Langley AFB, Virginia, and Lt Col Eugene A. Lupia, commander of the 381st Civil Engineering Squadron, McConnell AFB, Kans.

Colonel Ellis received the Newman Medal for directing programming and engineering support for $78 million in military construction program projects, the largest ever approved for TAC. Included were essential facilities for F-16, F-15, A-10, and a F-4 beddown projects at 10 TAC bases. He was also cited for achieving energy conservation goals and improving fire protection rates.

Colonel Lupia was awarded the first Sverdrup medal presented by the society for innovative management systems used in supporting three Air Force wings and 18 Titan II missile complexes. His attention to resource management, quality of life, energy conservation and community and customer relations programs earned him the award.

USAF SAME PARTICIPATION

In addition to General Gilbert's leadership of SAME last year, there was active USAF participation in the society's national and regional organizations.

On the executive committee last year General Gilbert, Brig Gen Clifton D. Wright, Jr., deputy director, and Harry P. Reitman, associate director of USAF Engineering and Services (AF/LEE); and Maj Robert J. Courter, Jr., assistant to the director, AF/LEE, all in the Pentagon.

Mr. Reitman, Major Courter and General Alkire, DCS/DE, AFLC, will continue new terms on the board of directors.

Among vice presidents at large was Col Matthew M. Cafiso, DCS/DE for headquarters Air Force Reserve, Robins AFB, Ga.

Standing committee chairmen included: Col Mario B. Ginnetti, constitution and by-laws; Col Duane E. Knutson, medals and awards; Gary D. Vest, membership; Col Robert L. Klingensmith, objectives; Maj Earnest O. Robbins II, programs; and Maj Joseph Loncki, publications, all from AF/LEE.

Regional vice presidents included Colonel Ellis, DCS/DE, TAC Mid-Atlantic Region; Brig Gen Allison G. Glover, DCS/DE, Military Airlift Command, Scott AFB, Ill. for the Missouri River Region; and General Alkire for Texas. (General Alkire previously served as the DCS/DE for Air Training Command, Randolph AFB, Texas).

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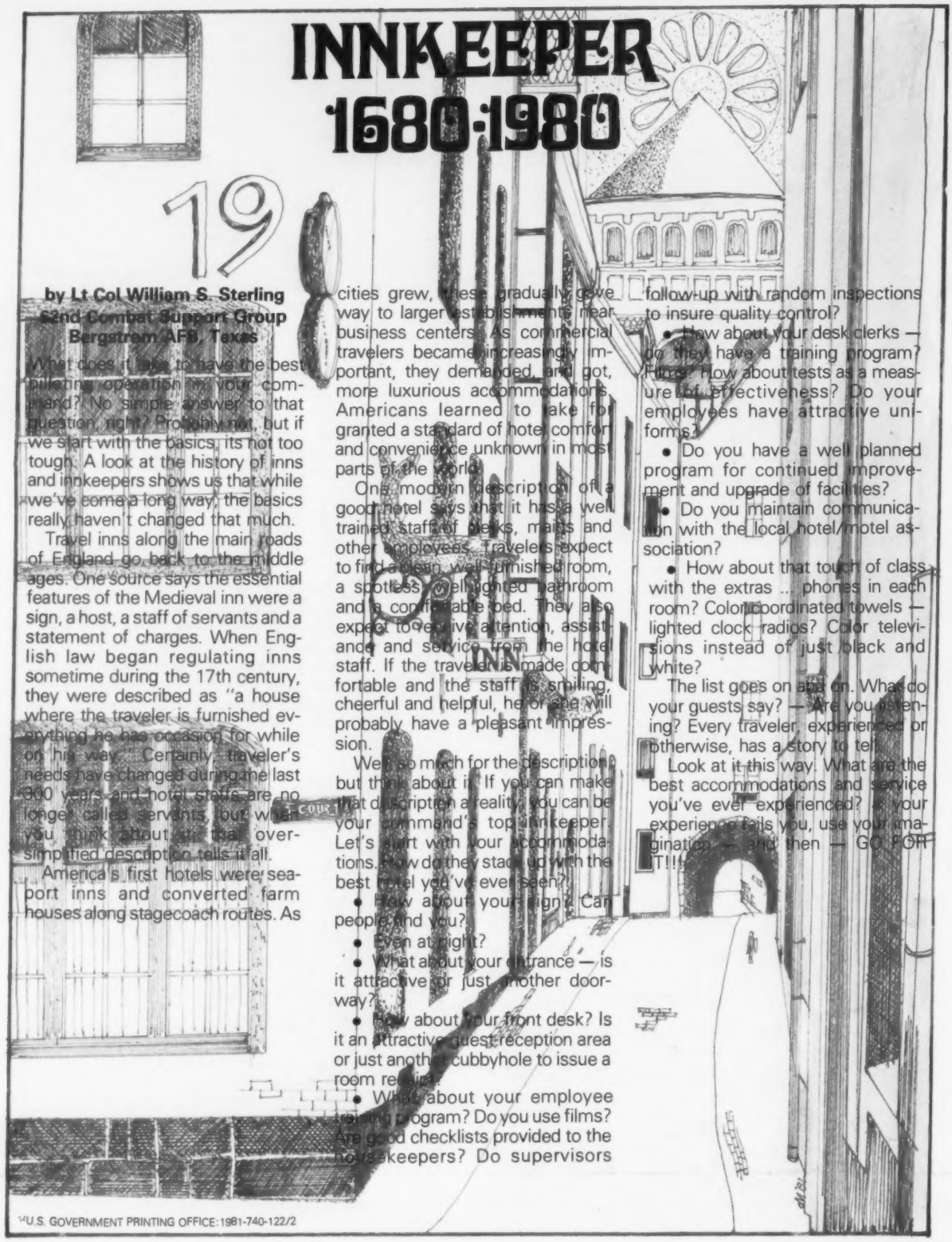

by Lt Col William S. Sterling
62nd Combat Support Group
Bergstrom AFB, Texas

What does it take to have the best billeting operation in your command? No simple answer to that question, right? Probably not, but if we start with the basics, it's not too tough. A look at the history of inns and innkeepers shows us that while we've come a long way, the basics really haven't changed that much.

Travel inns along the main roads of England go back to the middle ages. One source says the essential features of the Medieval inn were a sign, a host, a staff of servants and a statement of charges. When English law began regulating inns sometime during the 17th century, they were described as "a house where the traveler is furnished everything he has occasion for while on his way." Certainly, traveler's needs have changed during the last 300 years and hotel staffs are no longer called servants, but what you think about all that oversimplified description tells it all.

America's first hotels were seaport inns and converted farm houses along stagecoach routes. As cities grew, these gradually gave way to larger establishments near business centers. As commercial travelers became increasingly important, they demanded, and got, more luxurious accommodations. Americans learned to take for granted a standard of hotel comfort and convenience unknown in most parts of the world.

One modern description of a good hotel says that it has a well trained staff of clerks, maids and other employees. Travelers expect to find a clean, well furnished room, a spotless, well lighted bathroom and a comfortable bed. They also expect to receive attention, assistance and service from the hotel staff. If the traveler is made comfortable and the staff is smiling, cheerful and helpful, he or she will probably have a pleasant impression.

Well, so much for the description, but think about it! If you can make that description a reality, you can be your command's top innkeeper. Let's start with your accommodations. How do they stack up with the best hotel you've ever seen?

- How about your sign? Can people find you?
- Even at night?
- What about your entrance — is it attractive or just another doorway?
- How about your front desk? Is it an attractive guest reception area or just another cubbyhole to issue a room key?
- What about your employee training program? Do you use films? Are good checklists provided to the housekeepers? Do supervisors follow-up with random inspections to insure quality control?
- How about your desk clerks — do they have a training program? Films? How about tests as a measure of effectiveness? Do your employees have attractive uniforms?
- Do you have a well planned program for continued improvement and upgrade of facilities?
- Do you maintain communication with the local hotel/motel association?
- How about that touch of class with the extras ... phones in each room? Color coordinated towels — lighted clock radios? Color televisions instead of just black and white?

The list goes on and on. What do your guests say? — Are you listening? Every traveler, experienced or otherwise, has a story to tell.

Look at it this way. What are the best accommodations and service you've ever experienced? If your experience fails you, use your imagination — and then — GO FOR IT!!!

*U.S. GOVERNMENT PRINTING OFFICE: 1981-740-122/2